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Classic Curves, No Carving — Learn the Secrets to Making Bracket Feet

# Woodsmith®

Vol. 24 / No. 139

Build This Heirloom

## Bedside Chest

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# Woodsmith

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# SAWDUST

I have to admit that when winter sets in around here, a warmer climate sounds very inviting. But what I do look forward to with the cold weather is being able to spend more time in the shop. For me, it's the perfect time of year to try my hand at a project that has some interesting challenges — one that will stretch my abilities just a bit.

Now I'm not talking about building something that will take months to complete. Usually what I have in mind is a project that requires just a bit more attention to detail.

Take the feature project in this issue for instance. It's the Bedside Chest that's shown on the front cover. This chest has several interesting features: frame and panel construction, ogee profiles on the inset drawers, and bracket feet.

The elegant-looking bracket feet are one of the hallmarks of fine furniture. Although the feet appear to be carved by hand, that's not the case. Most of the work can be done on the table saw. Then all you have to do is some final shaping by hand.

This combination of using power tools and hand tools speeds up the process. Crafting the legs will still require a couple of days in the shop to get them just right. But for me it's satisfying work, and the end result more than justifies the little bit of extra time required to get it just right.

**LETTER & KEY RACK.** Of course there are times when it's nice to be able to rough out the material on Saturday morning, and have the last coat of finish on by Sunday evening. If this sounds good to you, check out the Letter and Key Rack on page 22.

**NEW FACE.** I'm happy to say that Ryan Mimick has joined our design team. His first project for us is the Keepsake Box on page 28. This project uses traditional splined miter joinery. But the drawer has an interesting detail that makes it slightly different from others I've made — the ends of the drawer are mitered. This creates an almost invisible joint line between the sides of the drawer and the box.

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Terry

## Woodsmith Readers' Gallery

Visit other *Woodsmith* subscribers' workshops, and see photos of the projects they've built. It's all online in the new Readers' Gallery on the *Woodsmith* web site: **www.Woodsmith.com**

We want you to be part of the Readers' Gallery! To submit photos of your favorite *Woodsmith* projects or views of your shop, follow the instructions you'll find at the Reader's Gallery.

A Look Inside

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### Bedside Chest ..... 6

*There are plenty of elegant details in this handsome project — a handy pull-out tray, three "raised" drawers, and shop-made bracket feet. But even with all these details, the construction is still straightforward. We'll walk you through every step.*

### Dovetailing Quick Tips ..... 15

*When building drawers, you can't beat a half-blind dovetail jig for speed and accuracy. And here are five tips to make your next set of dovetails faster, more accurate, and nearly "goof-proof."*

### Making Bracket Feet ..... 18

*With all those curves, you might think that making bracket feet is a real challenge. But you'll be surprised at how easy it is with our step-by-step instructions. If you've got a table saw, a band saw, and some 3/4"-thick stock, you're ready to get started.*

### Letter & Key Rack ..... 22

*Build a handy little rack this weekend, and you'll wonder how you ever got along without it. The rack provides the perfect spot to empty your hands and pockets. And you'll always know where your keys are (or at least where they should be).*

### Keepsake Box ..... 28

*We all accumulate precious keepsakes over the years. They deserve to be stored in a special place. This elegant box with its mitered corners offers three lined compartments for the safe storage and display of those treasures.*


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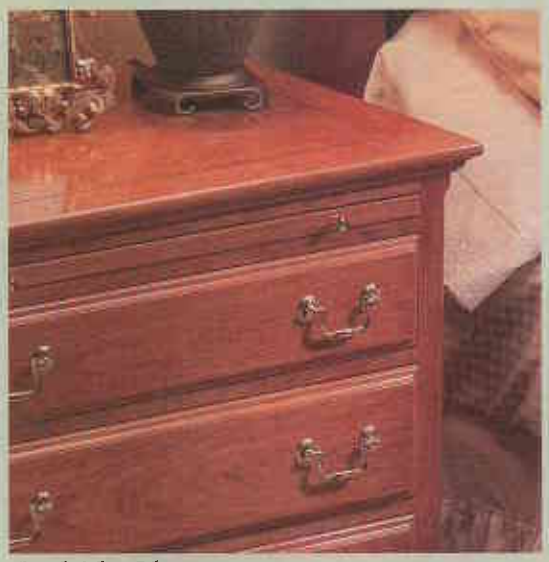

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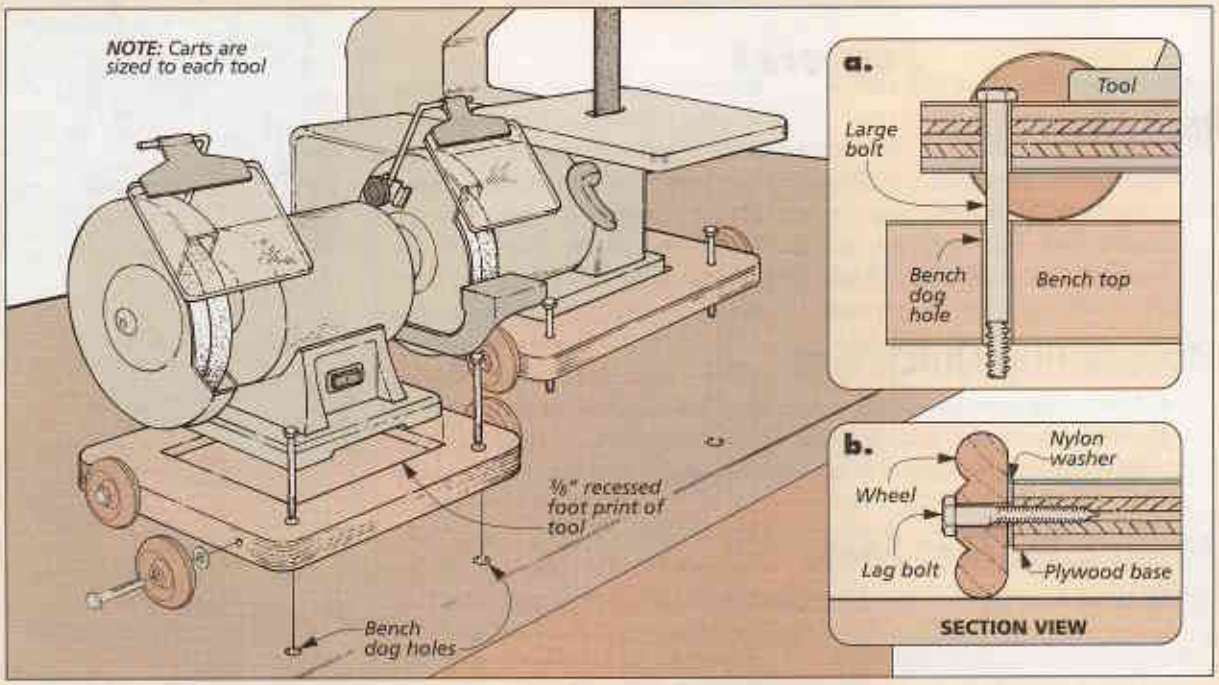
# TIPS & TECHNIQUES

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## Table Top Tool Cart

In my garage shop I have more bench top machines than I have bench space.

And moving those heavy tools like my grinder and sander back and forth was difficult. Not to mention the scratches that it put in my bench top. My solution was to make a rolling cart for each machine.

These small carts allow the bench top tools to roll from the front to the back of my bench. This way when I need to use the tool, I just roll it forward. And when I'm done I simply roll it back to the rear of the bench.

Each cart starts as a piece of plywood sized slightly larger than the machine's base. Then I trace an outline of the tools foot print onto the center of the plywood.

Next, I routed out a ⅜"-deep recess for the tool to set into. And mounted the tool onto the cart using the holes on the tool.

Then I added some small wheels to the corners to make the cart roll easily across the bench, as shown in detail 'b.'

To anchor the carts when in use, I drilled holes with the same spacing as the existing bench dog holes. Finally, bolts can be placed through the cart into the bench to keep it in place, detail 'a.'

*John C. Simons*
*Yardley, Pennsylvania*

## Holding Power

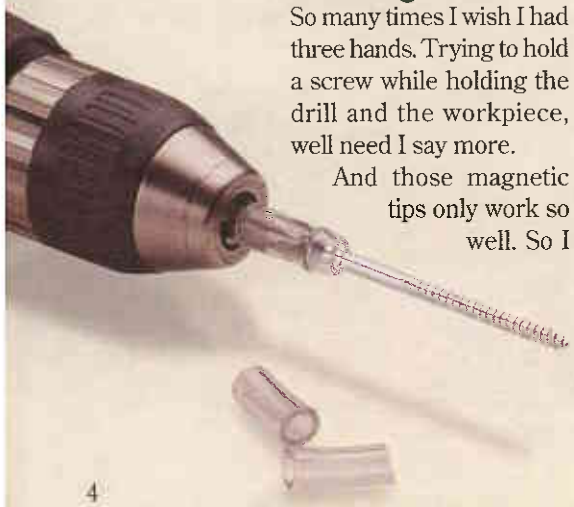
So many times I wish I had three hands. Trying to hold a screw while holding the drill and the workpiece, well need I say more.

And those magnetic tips only work so well. So I got the idea for an inexpensive screw holder.

I found that using a small length of clear tubing worked great. By placing it on the bit and screw, the screw stays put.

Now, when a task requires both hands, like on a ladder, I can be assured that my screw will not wander or fall off.

*Richard A. Kuster*
*Holden, Maine*



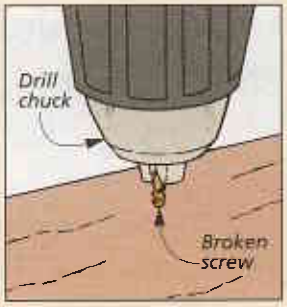
## Screw Removal

In a perfect world, screws would never strip or break. But for most of us, a broken screw is a common problem. In some cases, it's not the end of the world.

If you're "lucky" there might be enough left above the surface to chuck your drill onto.

By carefully tightening my cordless drill's chuck on the exposed screw remains, I can reverse the drill and back out the broken screw.

*Ronald Smith*
*Machesney Park, Illinois*



## CD Storage Bin

For years I've stored small pieces of hardware and odds and ends in old jars. These glass jars work fine

— until you drop one.

But now I can say computer technology is helping out in the shop. I've found the containers that writable CDs come in are great for storage.

The plastic containers are light and can be easily screwed to the underside of my shop cabinets. Plus the unscrewing of the CD container is much easier. It only takes a slight turn to release the lid. Unlike those glass jars that require several turns.

Another advantage is the opening. Glass jars tend to have a smaller mouth. So the only way to get anything is to dump the entire contents out.

The only modification was to cut the center bar out that holds the CDs in

place. Then I simply screwed it to the underside of my shop cabinets.

*Mike Sonnenberg*
*Lexington, Kentucky*

## Chop Saw Trash Can

In my small garage shop, space is a constant struggle. To consolidate as much as possible, I came up with a combination that works .

When using a chop saw, having to toss the cutoff across the shop to the trash was hit or miss. So, I got the idea to put my chop saw on the trash can.

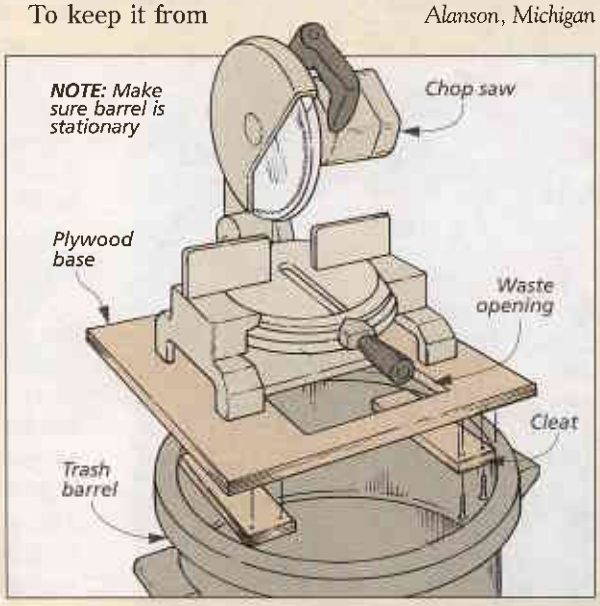
A 30-gallon barrel works well. But the size of trash cans varies, so the height will depend on the actual barrel used.

The saw gets attached to a plywood base that has a hole cut near the front, see drawing. This opening allows for the cutoffs and scraps to get swept right into the trash.

I attached some cleats to the underside of the base to help keep it from moving around too much.

To keep it from getting too top heavy, I added a few sand bags to the bottom of barrel.

*Perry Rutterbush*
*Alanson, Michigan*




## Bench Holster

It always seems as though I have more projects going on than work space. And getting my tools lost in the many layers of projects was an all too often occurrence.

My cordless drill gets used a lot, both in the shop and around the house.

So to keep it handy, I attached an ordinary laundry detergent bottle to my bench. I cut the bottom off, and use it like a holster, see photo.

Now I have a place to put it without misplacing it or taking up bench space.

*Ron Crow*
*Web City, Mo.*

## QUICK TIPS

### SANDING FINGERS

Sometimes you can't find a tool or jig to make a job any easier. This can be the case when sanding hard to reach spots or tricky details.

By placing some self-adhesive sandpaper on my finger tips, I can sand just about any detail there is.

No matter how tight of a curve, my fingers manage to conform to the profile.

*Oreos Williams*
*Akron, Ohio*

### THIN-CRUST PLY

When scoring plywood to reduce chip-out, try using a large, sharp pizza cutter.

Utility blade tips can dull quick. But the edge of the pizza cutter lasts a while. Plus you can re-sharpen it.

*Roger Breton*
*Cliffton Park, New York*

## SUBMIT YOUR TIPS

If you have an original shop tip, we would like to hear from you and consider publishing your tip in one or more of our publications. Just write down your tip and mail it to: *Woodsmith,* Tips and Techniques, 2200 Grand Avenue, Des Moines, Iowa 50312. Please include your name, address, and daytime phone number in case we have any questions. If you would like, FAX it to us at 515-282-6741 or send us an email message at: woodsmith@woodsmith.com. We will pay up to $200 if we publish your tip.

# BEDSIDE CHEST

*This chest may have heirloom-quality details, but the joinery is straightforward, and we'll show you how to build the bracket feet step-by-step.*

There are quite a few eye-catching details on this formal chest — the frame and panel top, the pull-out tray, the "raised" drawers with their ogee profiles and brass hardware, and the bracket feet. But if you look closely, you'll see that most of these details are pretty straightforward to build.

Take the top of the case, as a quick example. The panel is plywood, so there are no solid wood panels to glue up. (All the panels on this chest are plywood.) And the frame wraps around the top panel with tongue and groove joinery, which is easy to cut on the table saw.

When it comes right down to it, the only detail that's a bit out of the ordinary are the bracket feet. But don't worry. There's no carving involved. The curved profiles are roughed out with the table saw and band saw. The final shaping is done with a block plane and sandpaper. So it's really not all that difficult. And we've made it even easier with the step-by-step article that begins on page 18. (If you're still not convinced, check out the optional base featured on page 13 and the manufactured bracket feet on page 35.)

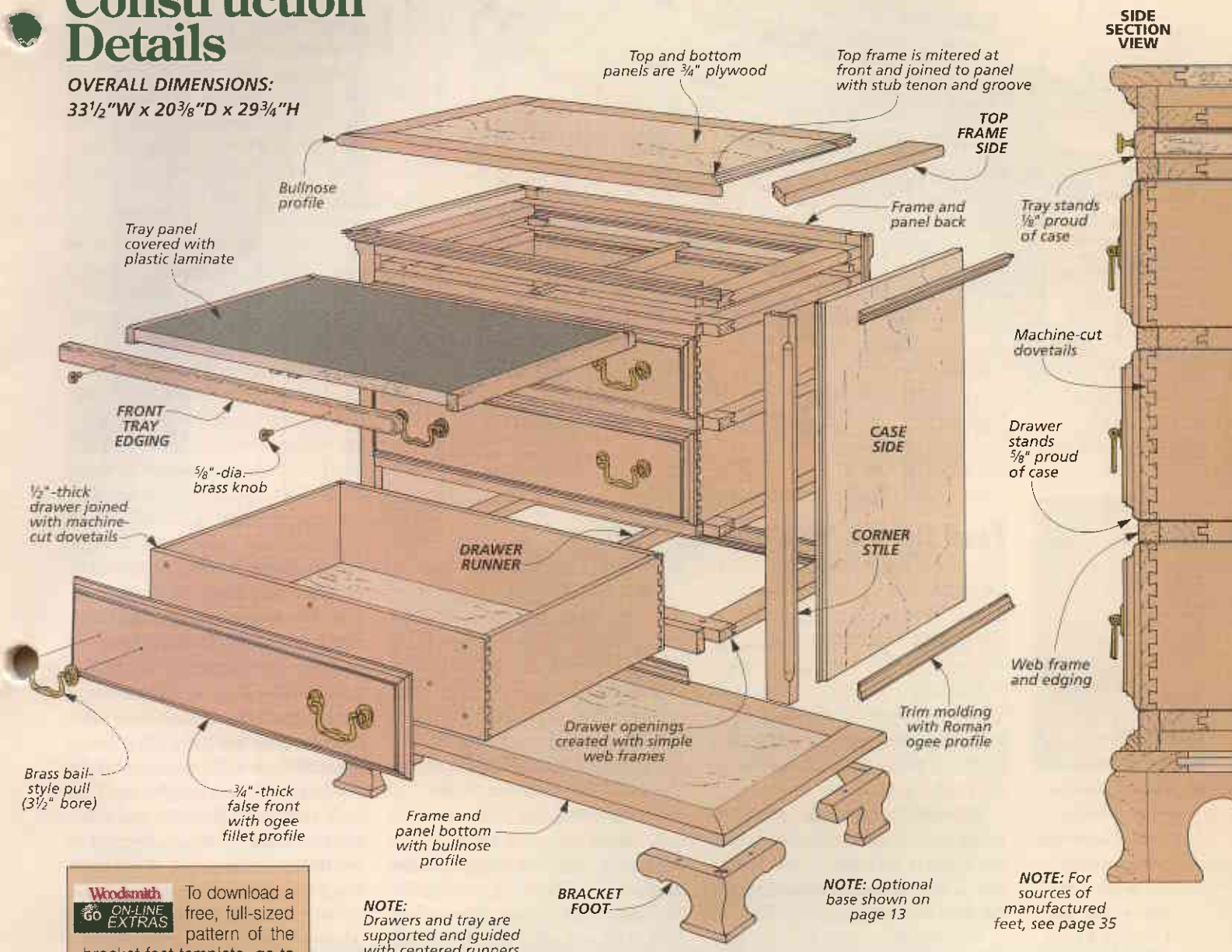
▲ *The sliding tray provides a convenient place to set a hot cup of coffee. And the plastic laminate is easy to clean.*

▲ *A common router jig is great for cutting these handsome dovetails. Plus take a look at the dovetailing tips included on page 15.*

▲ *The article on page 18 will give you all the patterns and instructions you need to build these bracket feet in your shop.*

# Construction Details

***OVERALL DIMENSIONS:***
***33½"W x 20⅜"D x 29¾"H***




**NOTE:** Drawers and tray are supported and guided with centered runners underneath

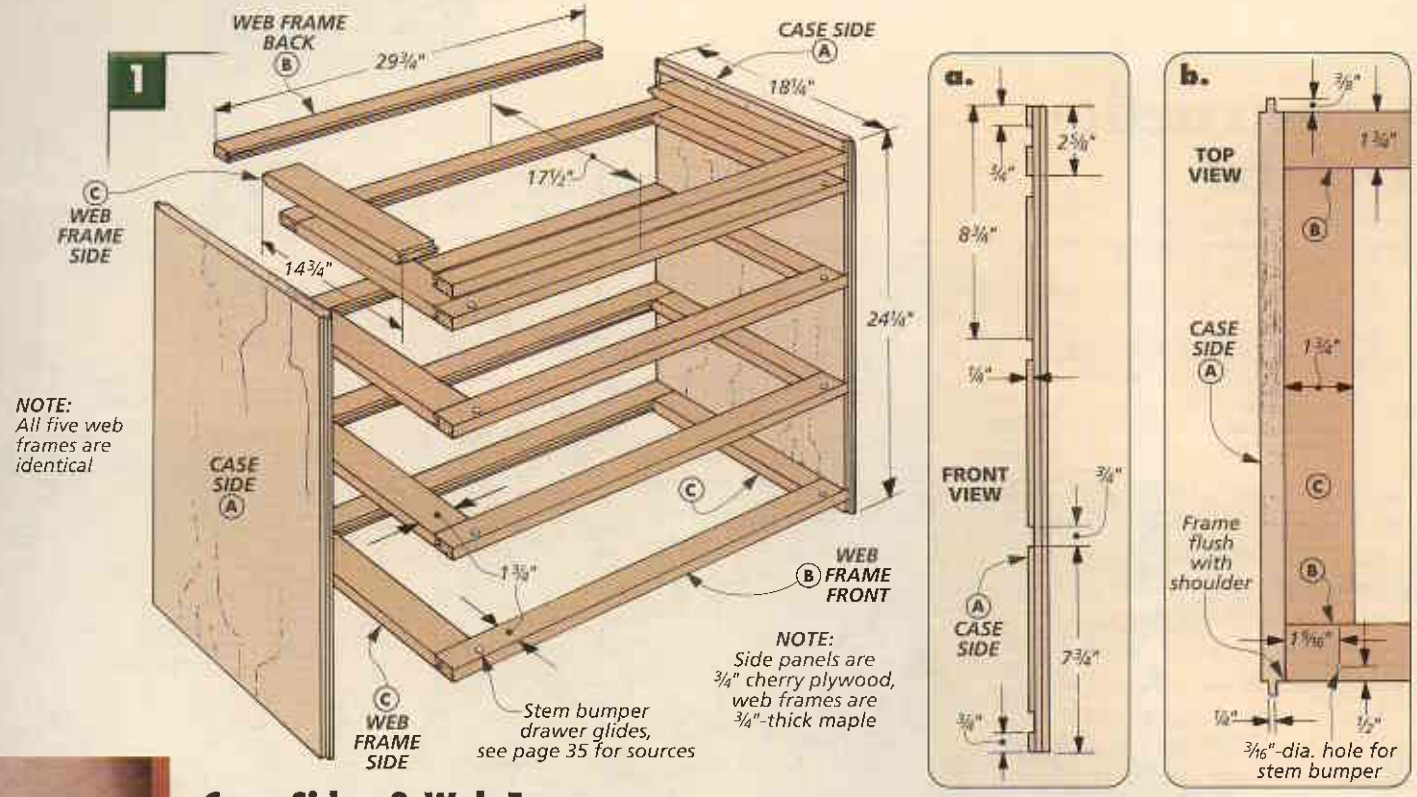
**NOTE:** Optional base shown on page 13

**NOTE:** For sources of manufactured feet, see page 35

Woodsmith GO ON-LINE EXTRAS To download a free, full-sized pattern of the bracket foot template, go to www.woodsmith.com.

## MATERIALS & SUPPLIES

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **A** | Case Sides (2) | ¾ ply. - 18¼ x 24¼ | **M** | Top/Btm. Frame Bk. (2) | ¾ x 2¾ - 28 | **Y** | Drwr. Stops (8) | ½ x ½ - 1½ |
| **B** | Web Frame Fr./Bk. (10) | ¾ x 1¾ - 29¾ | **N** | Trim Molding | ¾ x 11/16 - 14 In. ft. | **Z** | Tray Panel (1) | ¾ ply. - 16⅜ x 25⅝ |
| **C** | Web Frame Sides (10) | ¾ x 1¾ - 14¾ | **O** | Bracket Feet Blanks (3) | 1½ x 4½ - 16 | **AA** | Tray Fr./Bk. Edging (2) | ¾ x 1 - 27⅛ |
| **D** | Drawer Runners (4) | ¾ x 1 - 17½ | **P** | Bk. Bracket Braces (2) | ¾ x 3 - 3 | **BB** | Tray Side Edging (2) | ¾ x 1 - 16⅜ |
| **E** | Corner Stiles (4) | ¾ x 1¾ - 24¼ | **Q** | Sm. Drwr. Fr./Bk. (2) | ½ x 5¼ - 27⅛ | **CC** | Tray Guides (2) | 7/32 x ¾ - 16⅜ |
| **F** | Back Rails (2) | ¾ x 1¾ - 28 | **R** | Sm. Drwr. Sides (2) | ½ x 5¼ - 17¼ | • | (16) Plastic Stem Bumpers | |
| **G** | Back Panel (1) | ¼ ply. - 28 x 21½ | **S** | Lg. Drwr. Fr./Bk. (4) | ½ x 6⅛ - 27⅛ | • | (10) #8 x 1¼" Fh Woodscrews | |
| **H** | Front Rails (2) | ¾ x 1½ - 27¼ | **T** | Lg. Drwr. Sides (4) | ½ x 6⅛ - 17¼ | • | (22) 1"-long Wire Brads | |
| **I** | Front Edging (3) | ¾ x ¾ - 27¼ | **U** | Drwr. Bottoms (3) | ¼ ply. - 17⅛ x 26⅝ | • | (18) #8 x ¾" Rh Woodscrews | |
| **J** | Top/Btm. Panels (2) | ¾ ply. - 15¼ x 28 | **V** | Drwr. Guides (3) | 5/16 x 1½ - 16⅝ | • | (30) #8 Washers | |
| **K** | Top/Btm. Frame Fr. (2) | ¾ x 2¾ - 32¾ | **W** | Sm. Drwr. False Fr. (1) | ¾ x 5¼ - 27⅛ | • | (6) 3½" Brass Bail Pulls w/Screws | |
| **L** | Top/Btm. Frame Sides (4) | ¾ x 2¾ - 20 | **X** | Lg. Drwr. False Fr. (2) | ¾ x 6⅛ - 27⅛ | • | (2) ⅝"-dia. Brass Knobs | |



*Since the runners and guides are centered under the drawers, plastic stem buttons are added to the sides of the web frames to keep the drawers from rocking.*

## Case Sides & Web Frames

The case of this bedside chest starts out as two side panels that sandwich five identical web frames, see Fig. 1.

**CASE SIDES.** I started by cutting the *case sides (A)* to size from ¾" cherry plywood (Fig. 1). This way, when it's time to join the web frames to the panels later, you can simply glue them in place without having to worry about wood movement.

To make it easy to position the web frames, I cut five dadoes across the inside of each panel, as in Fig. 1a and 2. These dadoes should match the thickness of your stock (¾").

With the dadoes cut, the next step is to cut tongues on the front and back edges of the panels, as you can see in Fig. 3. And since each tongue is formed in two passes (flipping the panel between passes), it's best to sneak up on the final height of the blade until the tongue is ¼" thick.

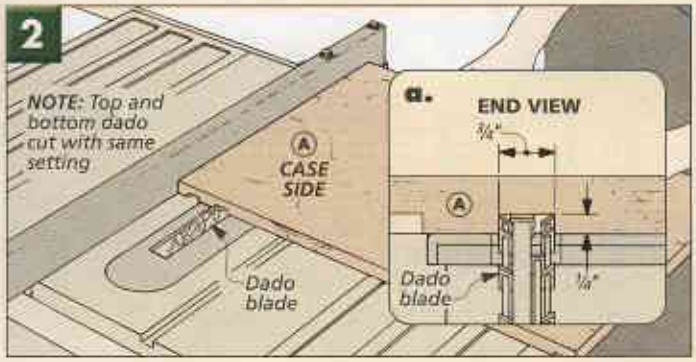
**WEB FRAMES.** Now the panels can be set aside while you make the five web frames that fit between them (Fig. 1). These are open frames joined with stub tenons and grooves. And since the front edges will be covered with edging, the frames can be built with a less expensive wood, like maple or poplar.

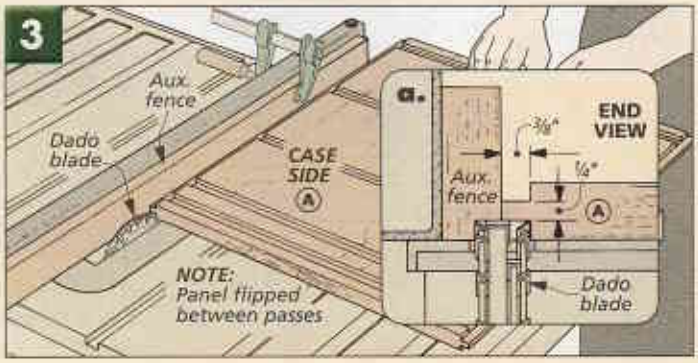
Before cutting the frame pieces to size, make sure the stock will fit snug in the dadoes you cut in the side panels. Then you can rip the 1¾"-wide *web frame fronts (B)*, *backs (B)*, and *sides (C)*. The fronts and backs are cut to finished length (29¾"), but when cutting the sides, you'll want to make sure the assembled frame is going to match the shoulder-to-shoulder dimension of the side panels (17½"), as in Fig. 1b.

With the web frame pieces cut to size, the only thing left to do is cut the stub tenon and groove joints that hold them together, refer to the box on the opposite page. The grooves are cut on the front and back pieces (Step 1). The sides receive the stub tenons (Step 2).

**ASSEMBLY.** Now the web frames are ready to be glued together. This isn't especially difficult, but you'll want to make sure the side pieces are flush with the ends of the front and back pieces. This way, you can be sure to get a good glue joint when gluing the frames between the two sides. Plus, it's a good idea to double check that the frames are flat when you clamp them together.

Before assembling the case, you'll need to add plastic stem bumpers to the front corners of the web frames,



as shown in Fig. 1b and the left margin photo. These bumpers will support the sides of the drawers later, and they need to be added now because after the case is assembled, there won't be enough room to get a drill between the frames.

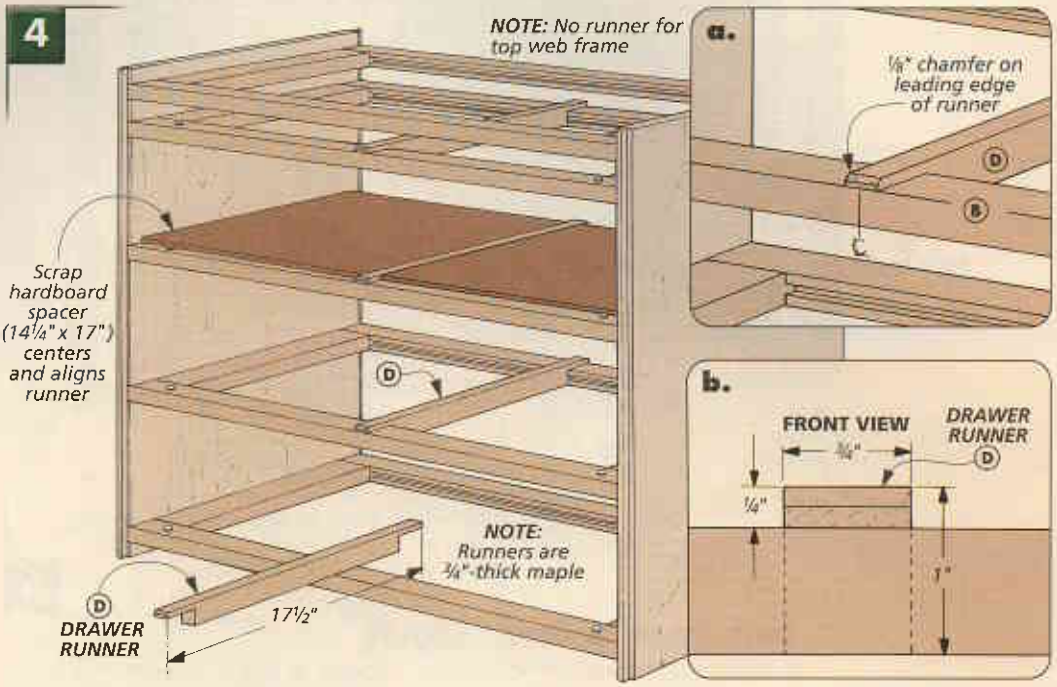
At this point, the web frames can be glued between the sides. I concentrated on the front of the assembly, making sure the web frames were flush with the shoulder of the tongues on the side panels (Fig. 1b).

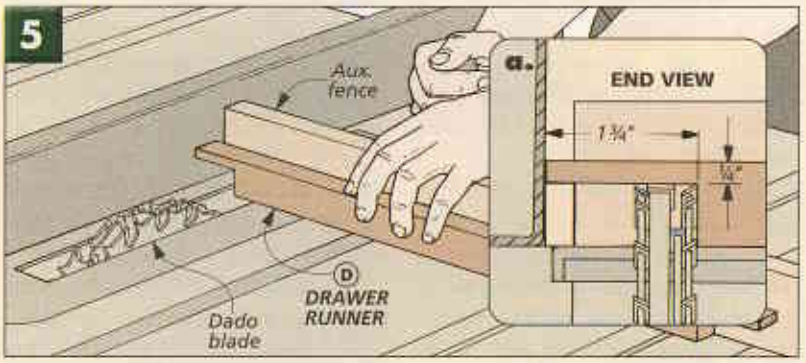
**DRAWER RUNNERS.** While the glue on the case assembly is drying, you can begin work on the four *drawer runners (D)*, as shown in Fig. 4. (The top frame doesn't need a runner.) These ¾"-thick pieces are ripped 1" wide and cut to match the depth of the web frames (17½").

There are two things to do with these runners before they can be glued in place. First, you'll need to cut a notch on each end to match the width of the frame pieces (1¾"). What you want to end up with is a runner that stands ¼" proud of the web frame (Fig. 4b).

As you can see in Fig. 5, I did this with multiple passes over a dado blade, supporting the runners with a long auxiliary fence and sneaking up on the length of the notch by using the rip fence as a stop.

After the notches were cut, all that's left is to chamfer the leading edge of the runner (Fig. 4a). Then it can be glued into the case.



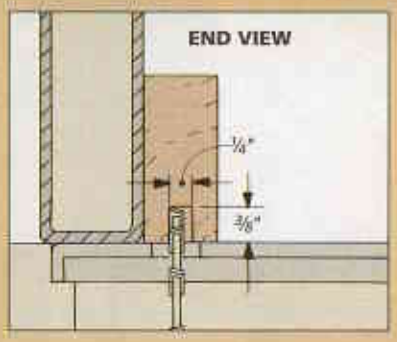




The position here is critical. You want the runner parallel to the side panels and perfectly centered. Fortunately, there's a foolproof method for doing this. Just cut scrap spacers to fit on either side of the runner. Sneak up on the size of these spacers so the runner fits snug between them. Then glue the runner in place.

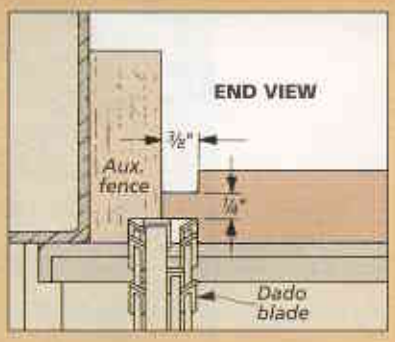
## STUB TENON AND GROOVE

You don't always need to cut mortises and tenons to hold a frame together. In fact, a quick and easy way to build a frame is with a stub tenon and groove joint. If the frame is open (like the web frames here), then the grooves are cut on the rails (Step 1), and the stub tenons are cut on the ends of the stiles or, in this case, the web frame sides (Step 2). If the frame includes a panel (like the case back later), then the grooves are cut on all four pieces.

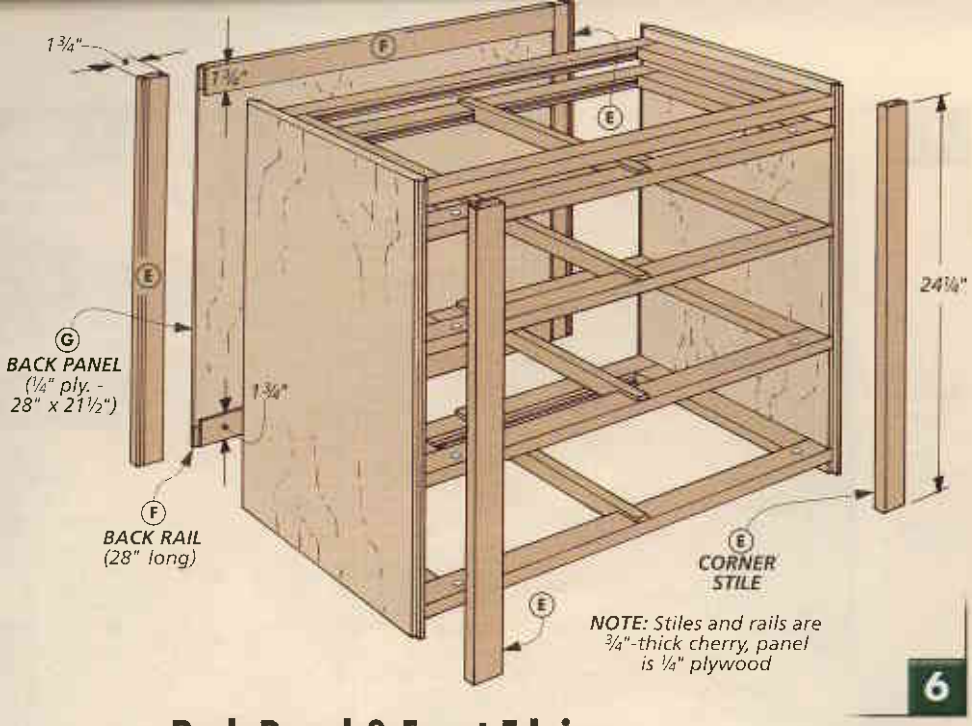
To get a good fit, I always center the grooves and tenons by cutting them in multiple passes (flipping them between passes). And if the panel is ¼" plywood, I size the grooves to hold the plywood snug. (It's usually less than ¼" thick.)

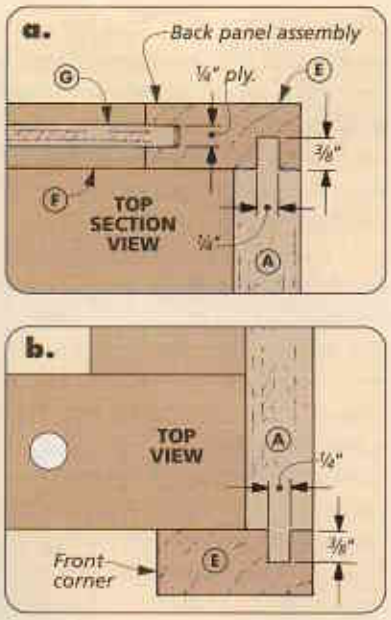



**1** *A centered groove is cut in two passes. The first pass is roughly centered. Then for the second pass, the workpiece is flipped end-for-end.*




**2** *Stub tenons are also cut in multiple passes with a dado blade. Sneak up on the height of the blade until the tenon fits snug in the groove.*




## Back Panel & Front Edging

With the case assembled, it's time to dress up the front and back edges, as you can see in Fig. 6. The back is a simple frame and panel with ¼" plywood for the panel. The front gets individual pieces of edging to cover the plywood and web frames.

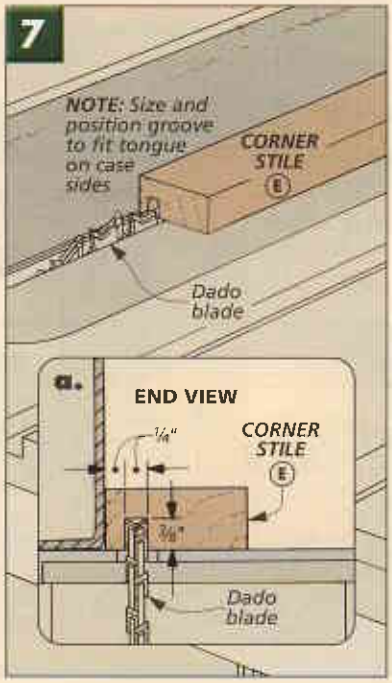
**CORNER STILES.** Both the front and back have identical *corner stiles (E)* for covering the edges of the plywood case sides, as shown in Fig. 6. Each is a ¾"-thick piece of cherry that's ripped 1¾" wide and cut to match the height of the case.

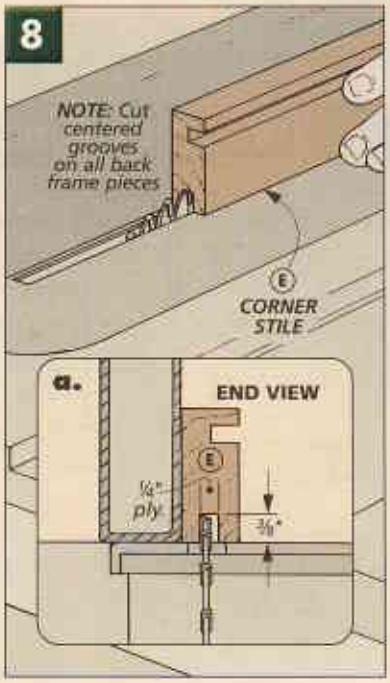
All four stiles need to have a groove cut on their inside face, as shown in Fig. 7. This groove is cut to fit over the tongue on the side panels. My tongue was right at ¼" thick, so I was able to use a ¼" dado blade in the table saw. Regardless of how you cut it, the groove should be cut to fit over the tongue *and* positioned so the edge of the corner stile is flush with the face of the side panel, as shown in Figs. 6a and 6b.

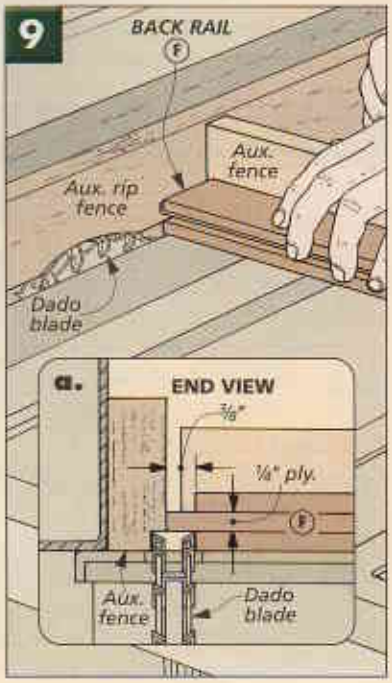
When these grooves have been cut, you can glue the front two stiles to the case. But there's still more work to do with the back stiles.

**BACK FRAME & PANEL.** The back corner stiles become part of the frame and panel assembly that's glued to the back of the case. The trick with this assembly is that it has to fit over the tongues already cut on the back of the side panels — which means you have to be careful to get the overall size of the panel right.

The dimension to focus on is the length of the *back rails (F)*, as shown in Fig. 6 above. And the best way to do this is to measure right from the case. First dry clamp the stiles to the case. Then measure between them to find the shoulder-to-shoulder distance. Add ¾" to this dimension for both stub tenons, and



you have the length of the back rails. (Mine ended up 28" long.)

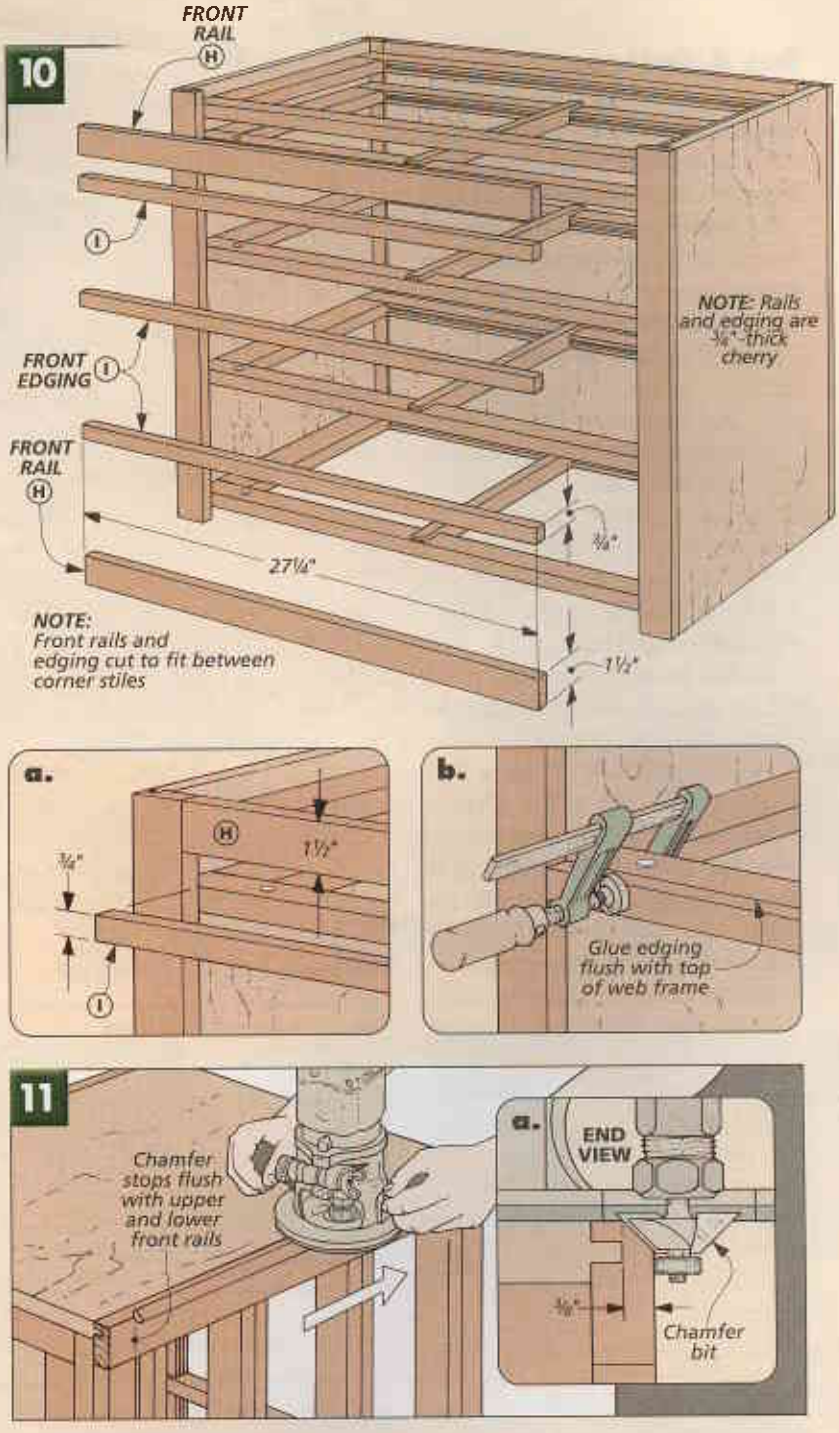
After the rails have been cut to length, you can cut the grooves on all four pieces, as shown in Fig. 8. This groove is different from the one you cut on the face of the stile earlier. It's centered on the edge and is sized to hold a 1/4" plywood panel.

Next, you can cut the stub tenons on the ends of the back rails, as shown in Fig. 9. Then the frame can be dry assembled, and the *back panel (G)* can be cut to size.

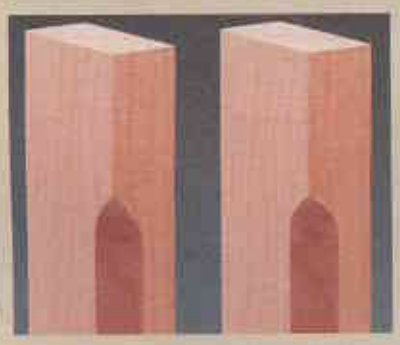
After the back is assembled, you can glue it to the case. The tongues on the case should fit into the grooves on the assembly and align it automatically. But if your tongues and grooves don't line up perfectly, you may need to widen the grooves enough to get the back to fit well.

**FRONT RAILS & EDGING.** With the back in place, you can turn your attention to the front of the case. Here, the edges of the web frames need to be covered, as shown in Fig. 10. To do this, I cut two *front rails (H)* to cover the openings at the top and bottom and three *front edging pieces (I)* for the web frames in the middle. All these pieces are 3/4" thick and are cut to fit between the front corner stiles (27 1/4").

**CHAMFER CORNERS.** The last thing to do at this point is rout a stopped chamfer on each of the corners, as shown in Fig. 11. These chamfers stop and start even with the upper and lower front rails. And when you're done, you'll want to do a little clean up at the ends of the chamfers, see the box below.




## CHAMFER CLEANUP



When you rout a stopped chamfer, its end isn't symmetrical, as you can see in the first workpiece at left. One side ends up a little "flat." But here's a quick solution. Simply wrap sandpaper around a dowel and carefully sand the end (right photo). It won't take much to get both sides looking the same (as in the second piece at left).

## Top & Bottom

The case is now ready for its top and bottom assemblies, as shown in Fig. 12. To keep things as easy as possible, these frame and panels are identical — or nearly identical. The only difference is that the top assembly has a small shadow line around the panel, as shown in the photo below left.

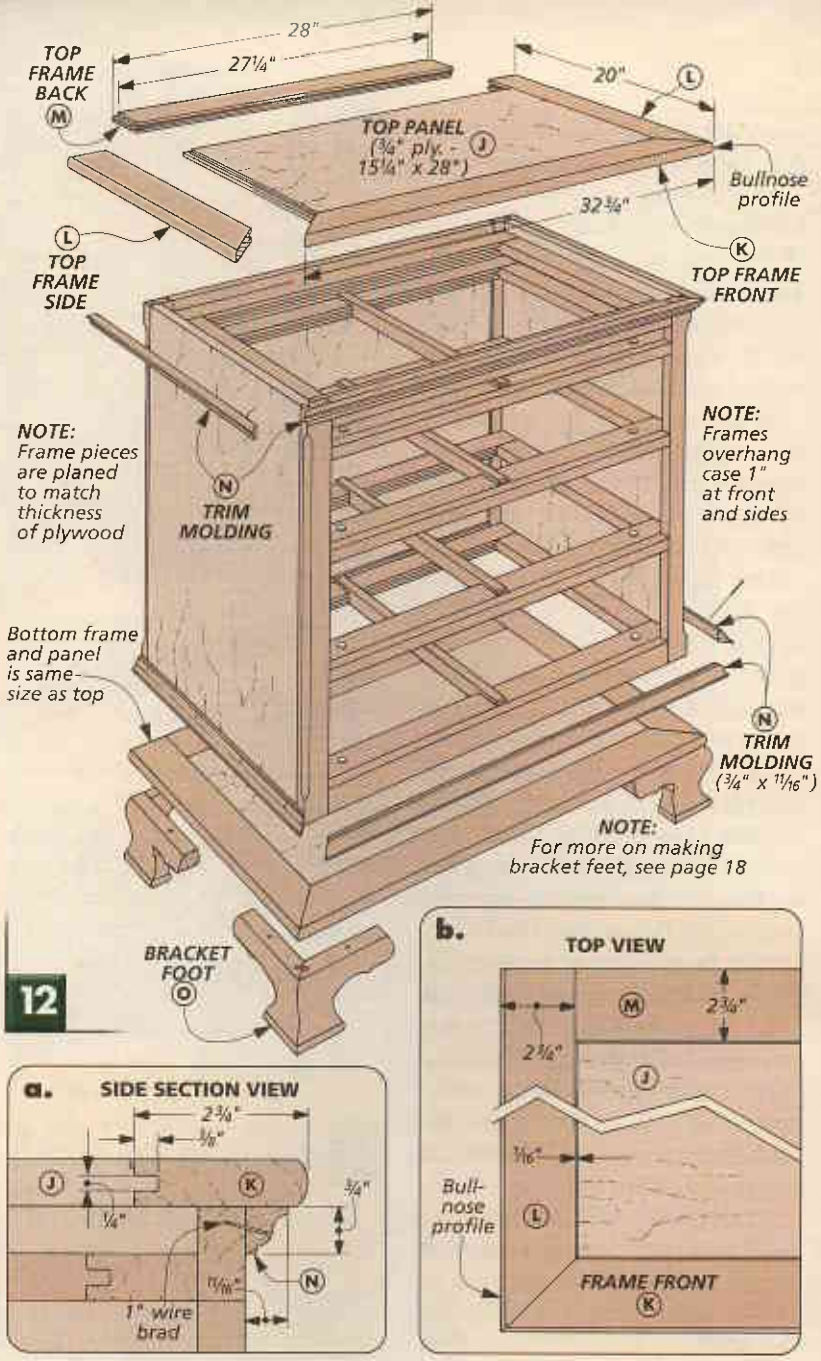
**PANEL.** The first thing to do is cut the *top* and *bottom panels (J)* to size, as indicated in Fig. 12. Both panels are ¾" cherry plywood. To hold and align the frame pieces, they have a tongue cut around all four edges, as you can see in Fig. 12a. (I cut these on the table saw just like the tongues on the side panels, refer to Fig. 3 on page 8.)

At this point, the bottom panel can be set aside while you cut the tiny shadow line I mentioned earlier. This shadow line is simply a 1/16"-wide rabbet. And to get a really clean cut, I decided to use a straight bit at the router table, as shown in Fig. 13. But be sure to start with the ends of the panel first so if there's any chipout, it'll be cleaned up when you rabbet the long edges.

**FRAME.** With the panels complete, it's time to work on their frames. The first thing to do is plane some stock to match the thickness of the plywood exactly. (¾" plywood is usually a hair less than ¾" thick.) Then you can rip the *top* and *bottom frame fronts (K)*, *sides (L)*, and *backs (M)* 2¾" wide (Fig. 12b) and cut them extra long.

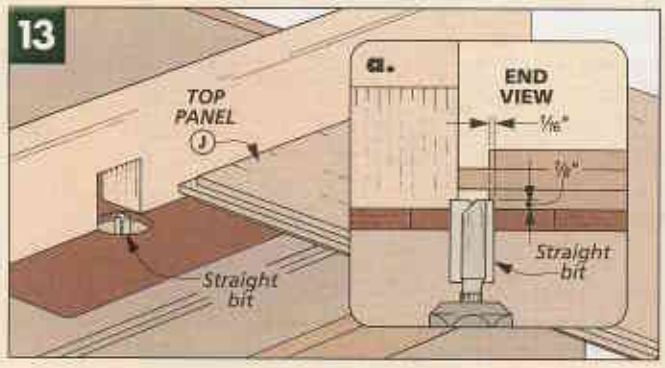
Next, you'll want to cut the grooves that will fit over the tongues on the panels (Fig. 12a). This way, as you miter and cut the frame pieces to length, you can check your progress with the actual panels.

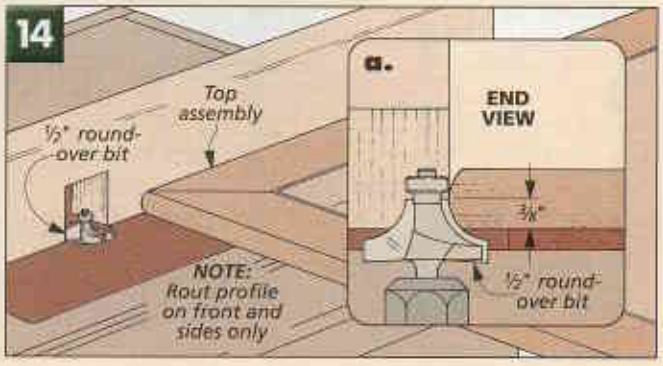
▲ *The shadow line between the plywood panel and solid wood frame is created by routing a small rabbet.*




I started with the sides, mitering one end but still leaving the pieces extra long. Then with the sides dry clamped to the panel, you can miter both ends of the front pieces, sneaking up on their final length.

Now before you cut the sides to length, the frame backs (M) need a little work. They're cut to the same overall length as the panel (28"). Then tongues are cut on the ends to fit the grooves in the side pieces.



**ASSEMBLY.** After the frame sides have been cut to length, the top and bottom frames can be assembled. Then you can rout a bullnose profile around the front and side edges, as shown in Fig. 14.

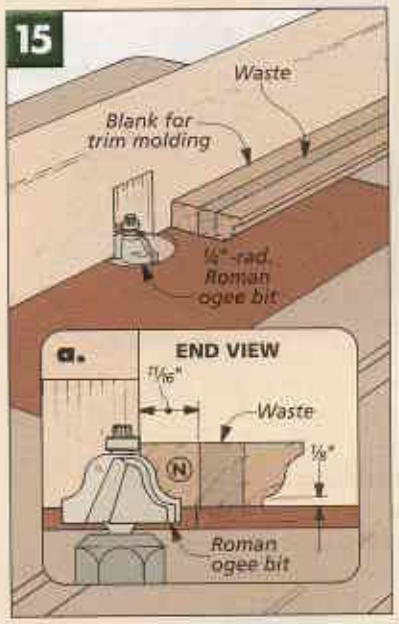
To attach the panels to the case, you can't use screws, so I simply glued them flush with the back and centered side-to-side. Then I made some *trim molding (N)*, as shown in Fig. 15, and glued and nailed it to the case with small wire brads.

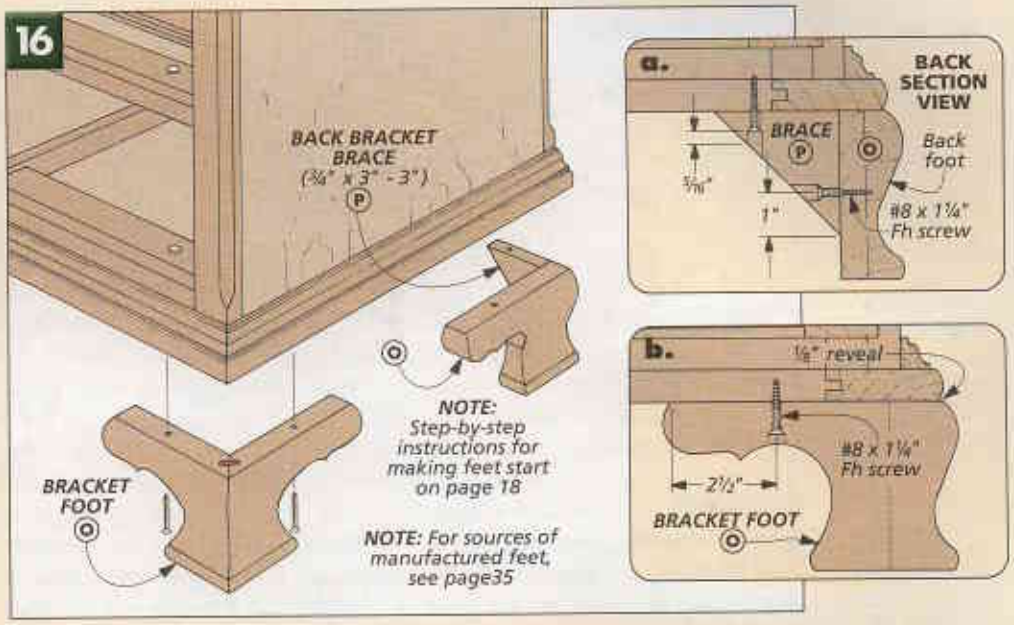
**BRACKET FEET.** Now is a good time to build the *bracket feet (O)*, see the photo at right. Even though there are quite a few steps to follow, these feet are easier to build than they look. Plus, all the steps have been laid out in the article on page 18.

Mounting the feet couldn't be any easier. As you can see in Fig. 16, all you have to do is drill some counterbored pilot holes at the drill press and then screw the feet to the bottom of the case (Figs. 16a and 16b).

Note: If you don't care for bracket feet, take a look at the optional base below. Or for some sources of manufactured bracket feet, see page 35.

*Step-by-step directions for building the bracket feet are given in the article on page 18.*



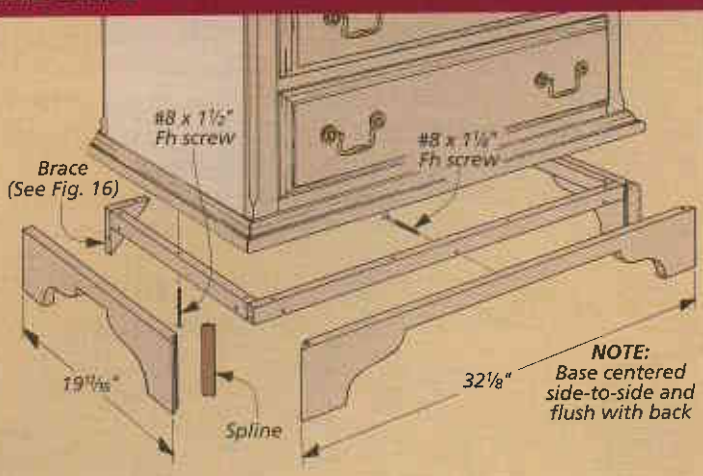



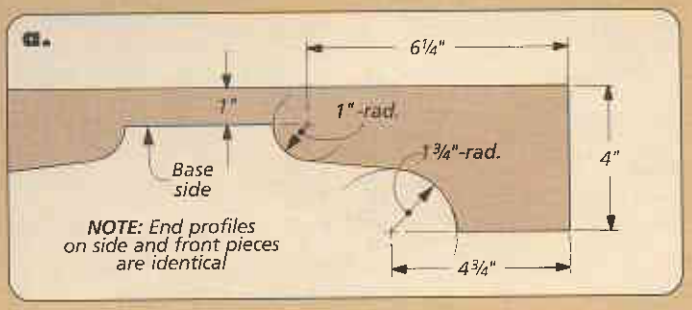

## OPTIONAL BASE

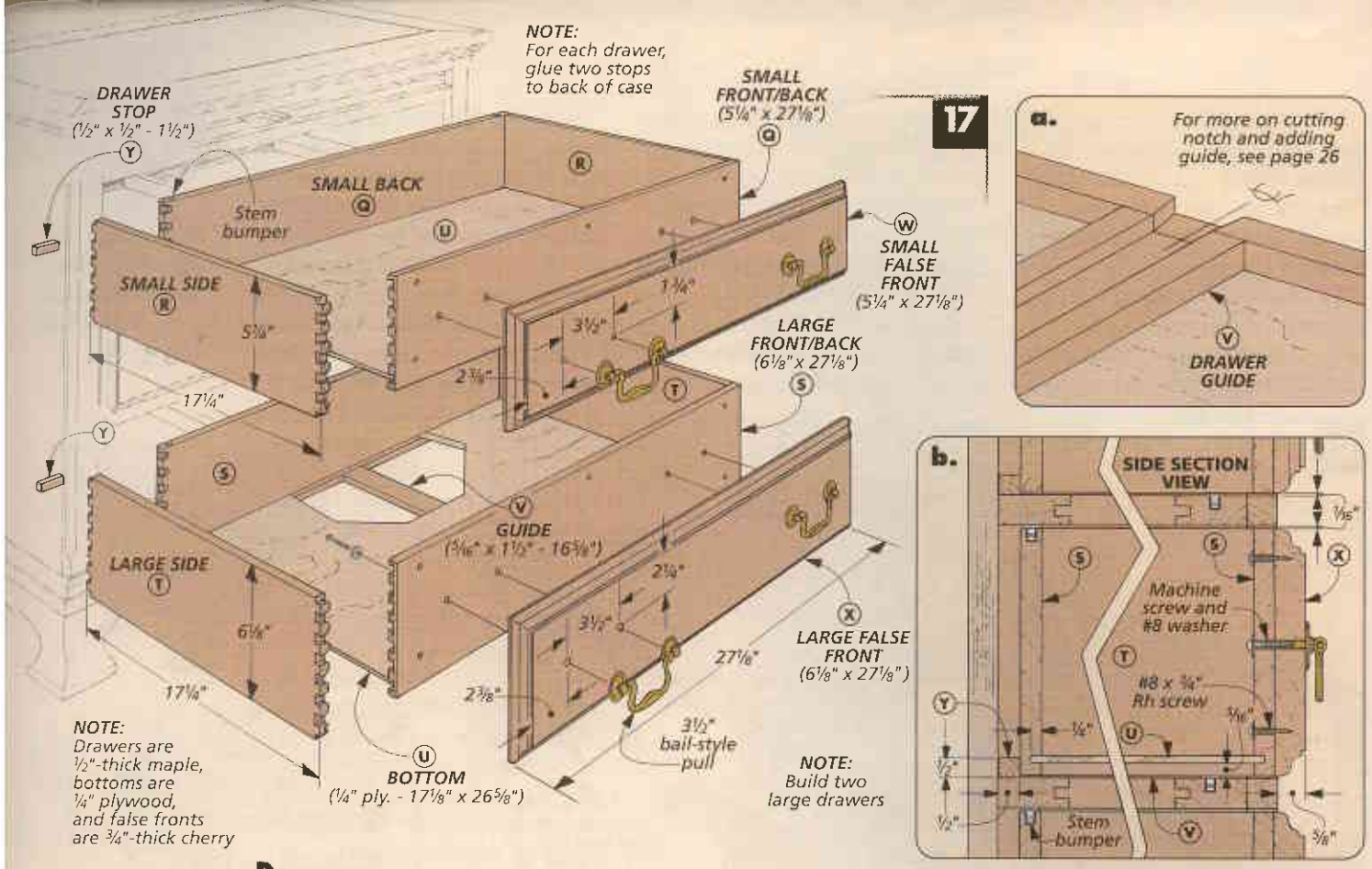
Bracket feet are quite distinctive, but here's a different base you could set this chest on. It's simply a mitered apron sized so the bottom frame will overhang it 5/16" at the front and sides. (This way, the base aligns with the trim molding.)

After mitering the pieces, the profiles can be cut (detail 'a' below). The real trick, though, is creating the straight lines between the profiles. Here, I used the same solution I used on the keepsake box base, turn to Shop Notes on page 27.

To attach the base to the chest, cleats are added to the front and sides, with triangular corner blocks at the back (the back bracket braces shown in Fig. 16 above).






## Drawers

With the case complete, I decided to build the three drawers. One is a bit shorter than the other two, but other than this, the drawers are identical.

**CUT TO SIZE.** The first thing to do is cut the drawer pieces to size from ½"-thick maple, as shown in Fig. 17. Even though there will be false fronts added later, I still sized the *small front (Q)*, *back (Q)*, and *sides (R)* and the *large fronts (S)*, *backs (S)*, and *sides (T)* to fit the drawer openings, allowing for a 1/16" gap along each edge.

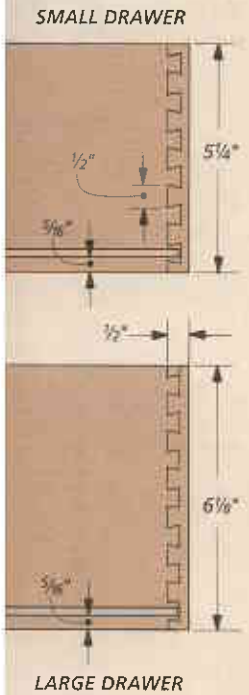
**DOVETAILS.** The drawers are joined with routed half-blind dovetails. If you have one of these jigs, then you already know the routine, but on the next page, there are a few tips that will make this process even easier.

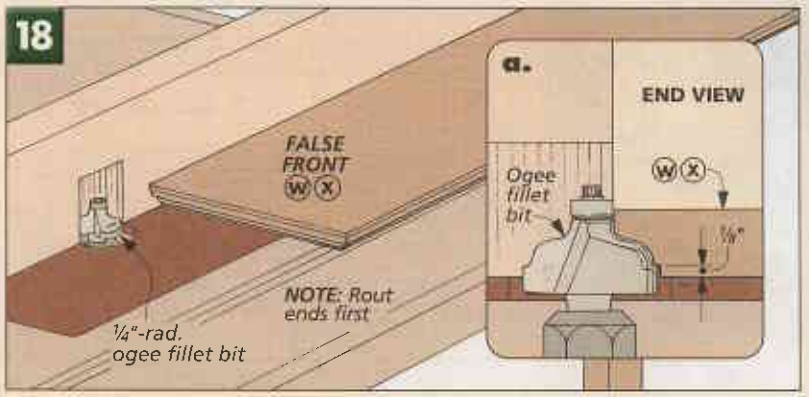
Next I cut the grooves for the drawer bottoms. Usually, I'll center these grooves on the bottom pin (and socket), but this time, there will be guides underneath these panels, so I wanted the *bottoms (U)* exactly 5/16" from the bottoms of the drawers, as in the left margin details. Then before gluing the drawers together, it's a good idea to drill mounting holes for the false fronts.

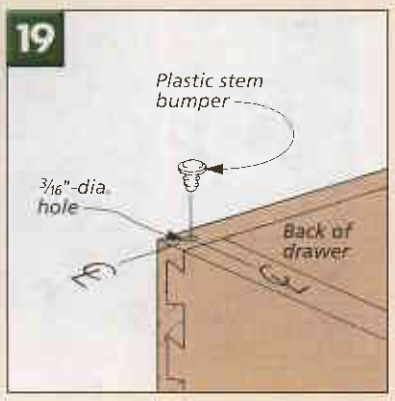
**GUIDES.** Now it's time to work on the *drawer guides (V)*, as indicated in Fig. 17a. Actually, the first thing you're going to want to do is cut the notch on the back, bottom edge of the drawer. But both of these procedures are covered on page 26.

**FALSE FRONTS.** Now that the guides are in place, you'll be able to slide the drawers into the case and position the *small (W)* and *large false fronts (X)*. These ¾"-thick cherry pieces are simple enough. All you need to do is rout an ogee fillet profile around the edges, as in Fig. 18.

**STOPS & HARDWARE.** Finally, I added two *stops (Y)* to each drawer opening, sizing them so the drawers stood 5/8" proud of the case. Then the drawer pulls can be attached to the front, and a stem bumper can be added to each back corner to keep the drawer from sagging (Fig. 19).



# Dovetailing Quick Tips

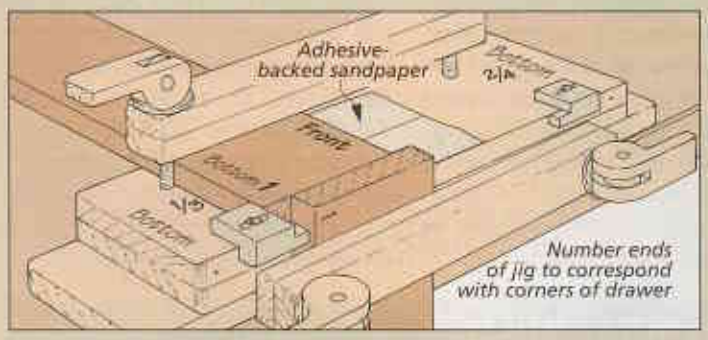
When building drawers, you just can't beat a half-blind dovetail jig. With a couple test pieces and a few minutes, you can be set up to rout dovetails quickly and accurately. And whether you only have one drawer to build or a chestful, you know they'll be as strong as possible — and they'll look good too.

Most half-blind dovetail jigs work essentially the same way, but an instruction manual isn't going to tell you everything (like how to keep your pieces organized or how to prevent chipout). So we've come up with a few tips that'll help you rout dovetails cleanly and accurately on any project.

## Label Carefully

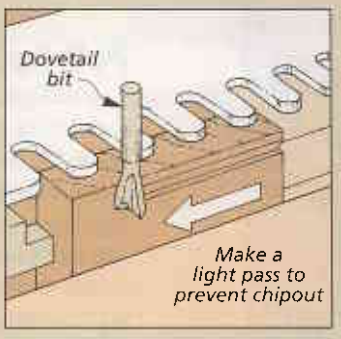
The more drawers you're building, the more you need to be organized to avoid mistakes. So I've gotten into the habit of labeling my drawer pieces carefully. As you can see in the drawing below, I identify each piece, number each corner sequentially around the drawer, and mark the bottom edges.

But I've also found that labeling the jig makes the process even more foolproof. The left side is numbered to remind me that the first and third corners are routed against this stop. The second and fourth corners are routed on the right side. And in each case, the bottom edges are positioned against the stops.




## Scoring Pass

When routing dovetails, chipout on the side pieces is pretty common, but there's an easy way to avoid this problem (or at least minimize it). I like to make a light, skim pass from right to left before I begin following the template. This skim cut establishes the shoulder, removing the material that would tend to chip out.




## Double Check

After turning off the router, your first impulse is to take the pieces out of the jig and test their fit. But first, visually double-check the sockets to make sure they're all the same depth. This way, if you've inadvertently stopped one short, you can rout it again without any trouble.

## Sandpaper Solution

Every once in a while, I would finish routing dovetails only to find that one of the workpieces had shifted slightly. And of course it was ruined. Then one day I came up with a simple solution. I put adhesive-backed sandpaper on the base and clamping bars, as in the drawing at left.

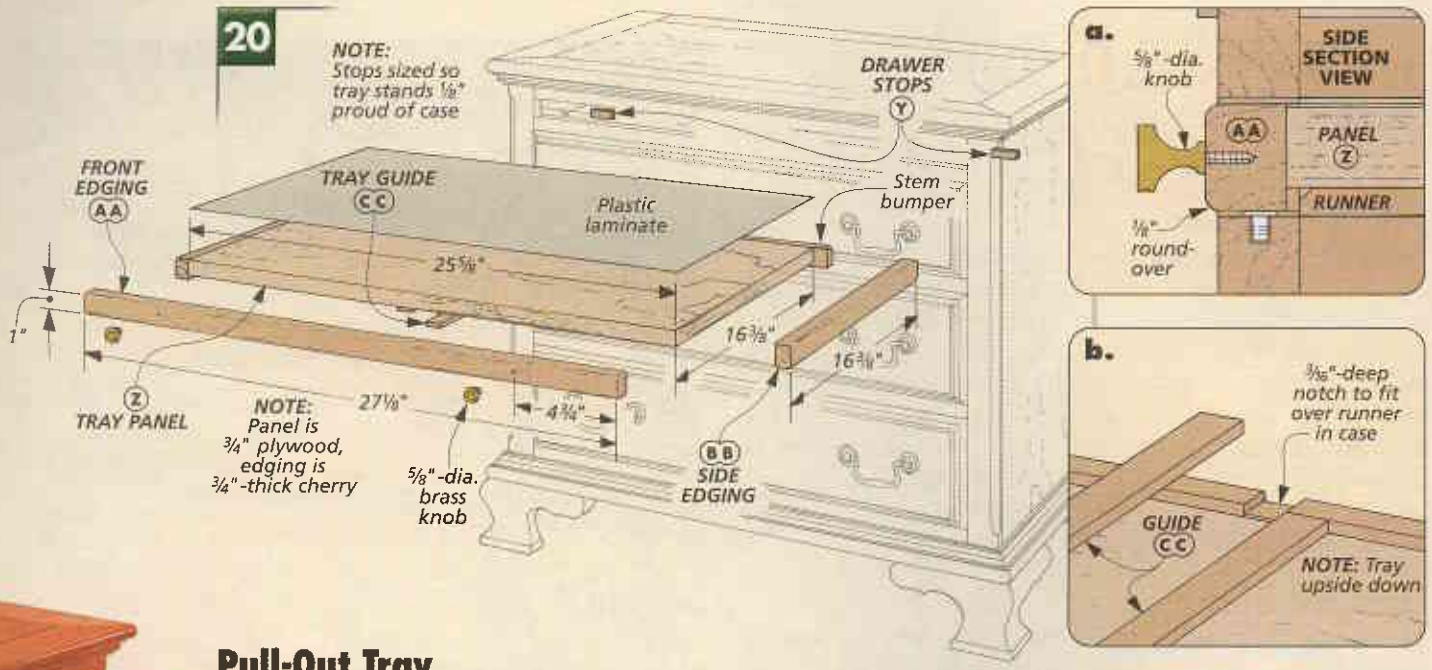
## QUICK TROUBLESHOOTING GUIDE

Setting up to rout machine-cut dovetails is always a trial and error effort. There's usually some fiddling around with the test pieces and adjusting of the jig to get a perfect fit. Here are a few of the common problems (and solutions). Other problems are usually caused by the drawer pieces not being flush across the top or because they shift as they're being routed.

***Too Loose**. If joint is too loose, increase bit depth.*
***Too Tight**. If the joint is too tight, decrease bit depth.*

***Too Deep**. If pins go too deep, move template forward.*
***Too Shallow**. If not deep enough, move template back.*

***Offset**. If the pieces don't align at the top or bottom, they may not have been positioned tight against the stops.*



## Pull-Out Tray

The pull-out tray above the drawers couldn't be any simpler. As you can see in Fig. 20 above, it's a 3/4" plywood panel with a piece of plastic laminate to protect the top and strips of solid wood to hide the plywood edges.

**TRAY PANEL.** The first thing to do is cut the *tray panel (Z)* to size, as shown in Fig. 20. I ripped the plywood 16 3/8" wide. But I should probably point out that the tray won't stand proud as far as the drawers (5/8"). It only sticks out 1/8" past the front face of the case. (A couple "drawer" stops added later will take care of this.) As for the length of the panel, it's the same as the width of the drawer (27 1/8"), minus 1 1/2" for the strip of edging on each side. (My panel ended up 25 5/8" long.)

**LAMINATE.** Next I added the plastic laminate to the panel. Not only does it protect the wood from hot cups of coffee and tea, it's also easy to clean.

When applying plastic laminate, I like to use contact cement. The important thing is to make sure you've got enough cement on both surfaces to get a good, consistent bond. Then applying and trimming the laminate are no big deal, as you can see in the box below.

**EDGING.** When the laminate is trimmed flush, it's time to add the edging to cover the plywood. The height (width) of these strips of 3/4"-thick solid wood will determine the gaps above and below the tray, as shown in Fig. 20a. So I ripped the *front (AA)*, *back (AA)*, and *side edging (BB)* pieces 1" wide (tall) and left them extra long.

Since the front and back pieces will overlap the sides, I glued the sides to the panel first and trimmed them flush. Then the same can be done for the front and back pieces.

Before mounting the tray, the last thing I did was to rout a 1/8" round-over around all the edges and sand the corners (Fig. 20a).

### APPLYING LAMINATE

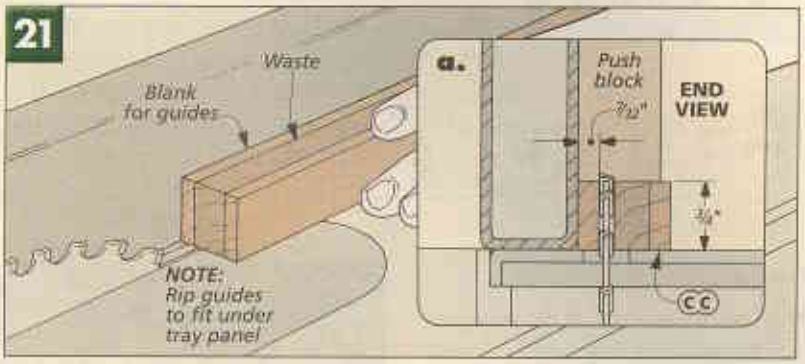
**1** *Apply two coats of contact cement to oversized laminate and panel. Then center laminate over the panel, using dowels as spacers. Remove one dowel at a time, rolling the laminate down as you go.*

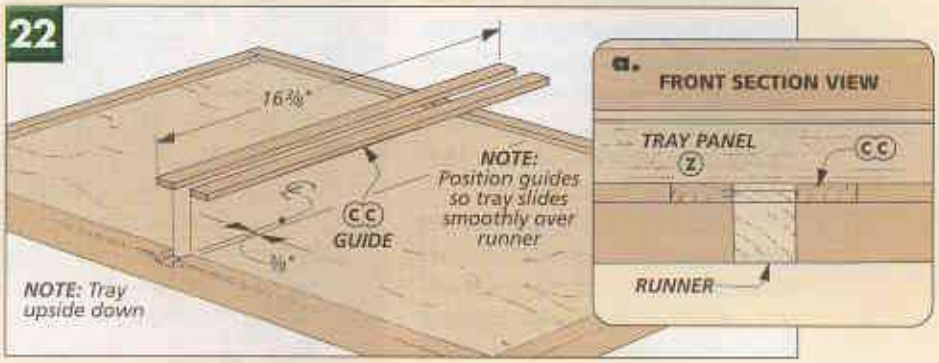
**2** *With the laminate in place, it needs to be trimmed to match the plywood panel. To do this, mount a flush trim bit in the router and rout around one face of panel. Then lightly sand the edges.*

**TRAY GUIDES.** Now it's time to get the tray to slide in and out of the case smoothly. Like the drawers, the tray is supported and guided from below by a drawer runner at the center and the plastic stem bumpers at the sides of the web frame.

What's different here is how the tray rests on the runner. Instead of actually resting on the guides like the drawers do, the tray rests on the notch you'll cut in the back. This means, you want to be pretty careful that the notch in the back of the tray ends up 3/16" deep (Fig. 20b).

To guide the tray, I made a pair of thin *tray guides (CC)* to fit under the panel and ride against either side of the runner (Fig. 22a). Mine ended up only 7/32" tall, and rather than plane these thin pieces down, I simply ripped them to this width from a piece of 3/4"-thick stock, as you can see in Fig. 21.



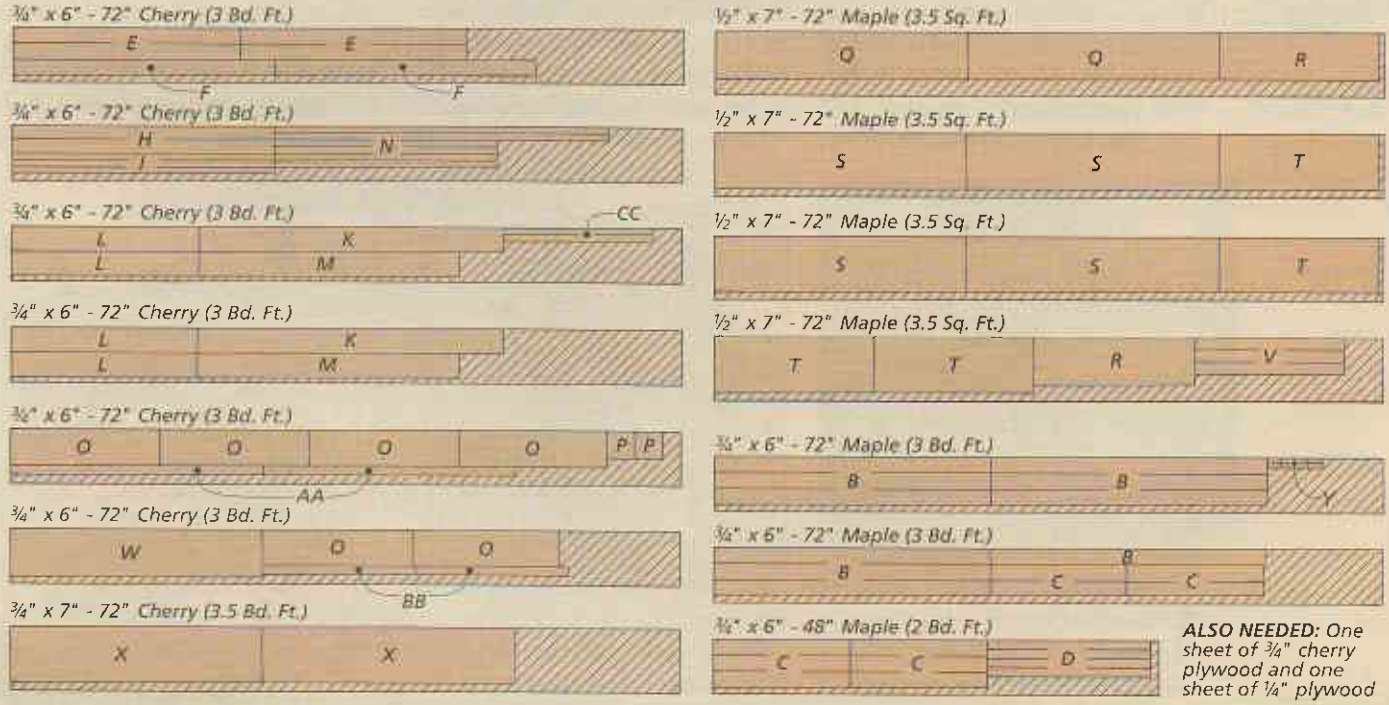




To mount the guides, the first thing I did was find the center of the tray and draw a line 3/8" over from the center (half the width of the centered runner inside the case). To double check the accuracy of this line, I removed the drawers and slid the tray into its opening, centering it from side-to-side. Now you should be able to look up under the tray and see if your layout line aligns with the edge of the drawer runner, and if it does, you can glue one of the guides flush with this line.

To position the other guide, I used a scrap the same thickness as the drawer runner to act as a spacer. When the glue dried, I tested the fit and sanded the guides as needed.

**HARDWARE & FINISH.** Finally, before adding the knobs to the tray and the pulls to the drawers (see page 35 for sources), I wiped on several coats of *Hope's* tung-oil varnish. W

## CUTTING DIAGRAM




***ALSO NEEDED:*** *One sheet of 3/4" cherry plywood and one sheet of 1/4" plywood*

# BRACKET FEET

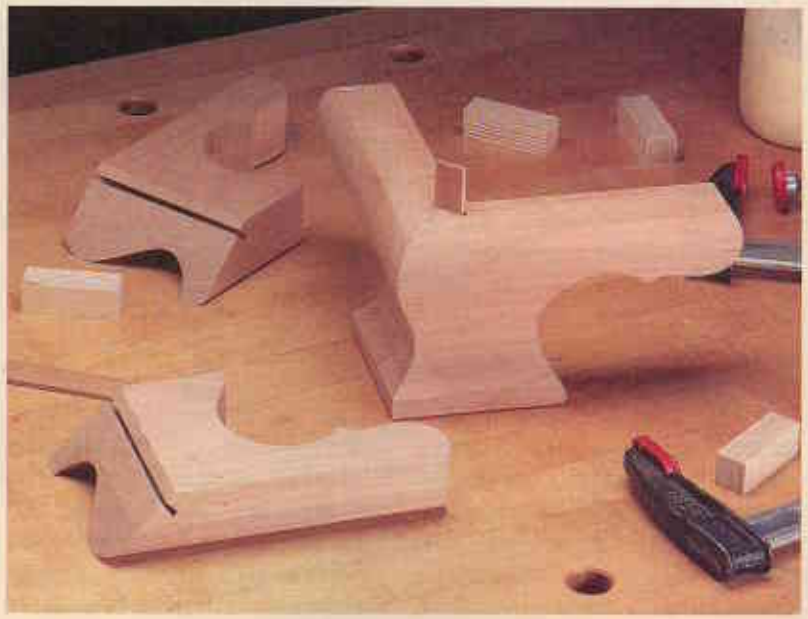
Bracket feet have just the right combination of strength and elegance. The thick blocks provide plenty of support for a traditional project like the bedside chest on page 6. But the graceful contours of the faces and the curves of the scalloped profiles keep the feet from looking too heavy. All in all, they're pretty impressive.

On the other hand, if you've never made bracket feet, it's easy to be a bit intimidated by all these curves. Don't be. They don't require nearly as much handwork as you might expect — most of the shaping is done at the table saw and band saw.

**FROM ROUGH TO READY.** Bracket feet start out as 1½"-thick blanks. But as you can see in the margin photo, I glue two ¾"-thick pieces together, so I don't have to buy any 1½"-thick stock. The blanks are then cut oversized (4½" x 16"), so two halves can be cut from each blank.

All of the work of shaping the face profile is done while the blanks are oversized. Then they'll be cut in half and mitered, and the curved scallop will be cut (see the pattern on the next page). Finally the halves of each front foot will be glued together.

▲ *Bracket feet look like they were cut from thick blocks of wood, but these blanks were made with two pieces of ¾"-thick stock.*

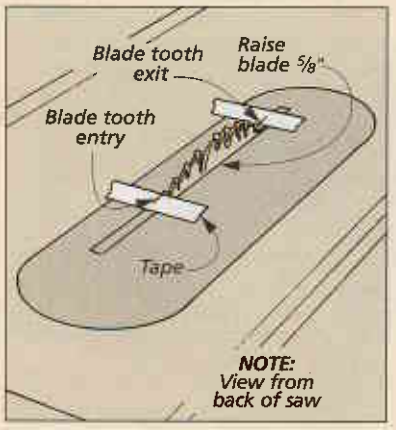


## Roughing Out the Face Profile

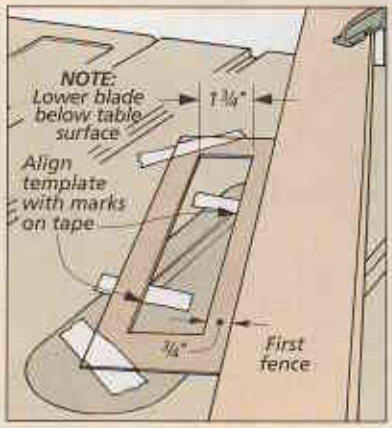
With the blanks in hand, you're ready to create the S-shaped profile on the face of each blank. All the rough work for this is done at the table saw, starting with a simple cove (Steps 1-3).

**COVE SET-UP.** A cove is cut by pushing a board across the table saw at an angle, guided by a pair of wood fences. If you've never cut a cove before, don't worry. Steps 1 and 2 will show you exactly how to set up your table saw. And cutting the cove is done in multiple passes, "nibbling" away only 1/16" of material with each pass (Step 3).

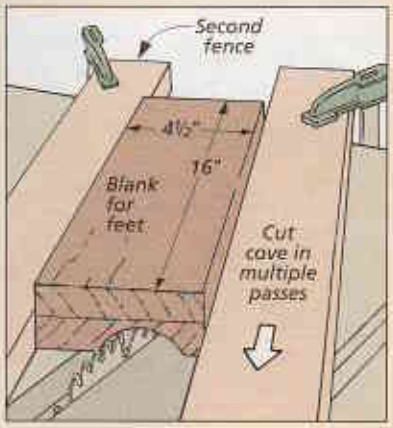
To find the correct angle of the fences, I first mark the entry and exit points of the blade when it's raised to its full height, which is ⅝" for this cove (Step 1). Then I make a posterboard "frame" (with a 1¾"-wide opening and a ¾" border) and




**1** *To begin, raise the blade to the final depth of the cove (⅝"). Then using tape, mark where the teeth of the blade enter and exit the table.*




**2** *Next, make a template with a 1¾" inside window (the cove's final width). Then angle the template so the long edges touch the marks.*




**3** *With both fences in place, set the blade 1/16" high and make a pass. Raise blade in 1/16" increments and repeat until cove is ⅝" deep.*

angle it until it touches the entry and exit points (Step 2). Now the first fence can be clamped in place.

To position the second fence, simply clamp it to the table with one of the blanks sandwiched in between. (The blank should slide smoothly.)

**CUT COVE.** At this point, you're ready to cut the coves (Step 3). Start with the blade set 1/16" above the table, and don't remove any more than 1/16" in one pass. Stop when the cove is at its full height (5/8").

**MAKE TEMPLATE.** Now before you do any more shaping, it's a good idea to make a template. (As you can see in the photo below, I made mine out of hardboard.) The pattern below is the only one you need for the feet. The curve on the end will help you create the face profile. (The scalloped profile will be cut later.)

With your template in hand, set it on the ends of each blank and align it with the cove. Then trace around the template, as shown in the photo below. Now you've got a good guide for what the profile will look like and where to remove the waste.

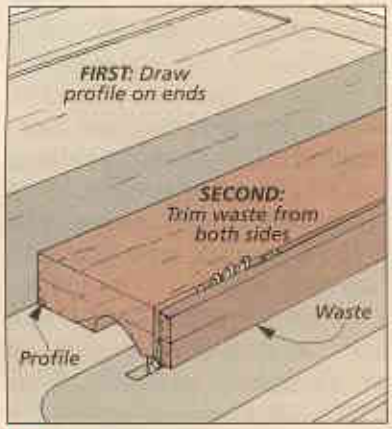
**FINISHED WIDTH.** The next step is to begin removing the waste by trimming the edges of the blanks (Step 4). With the profile already drawn on the ends, all you need to do is set the fence so the blade aligns with the profile lines. (You'll end up trimming about 1/4" or so from each edge.)

**COMPLETE COVE.** Now you're ready to elongate one edge of the cove. You could do this with a rasp or a file, but I removed most of the waste much quicker with a 1/2"-wide stacked dado set, as you can see in Step 5.

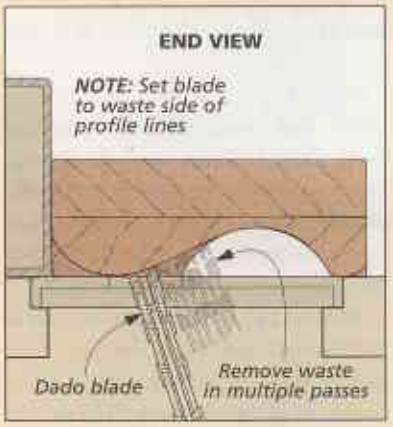
In removing the waste, you'll need to adjust both the angle and the height of the blade, but there aren't any hard and fast dimensions to work with here. The best way to set up the saw is to crouch behind the saw and eye down the saw blade (with the blank behind the blade so you can see the profile.)

Don't attempt to cut right to the line. The idea is just to get close enough so the final shaping doesn't take a lot of time (or effort). And be ready to make several passes, resetting the fence and the angle of the blade with each pass.

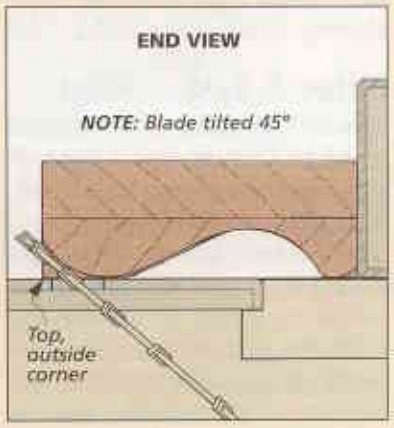
**ROUNDOVER.** After the blanks are ripped to width, the roundover located on the top, outside corner can be roughed out. Again I used the table saw to remove much of the waste, but this time, I used a regular saw blade tilted 45°, as shown in Step 6.




**4** *With the profile laid out on the ends of each blank (see photo below), rip them to final width (4"), trimming waste from each edge.*

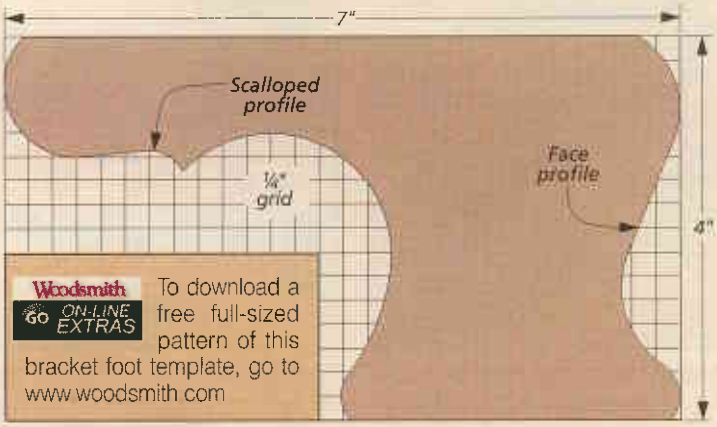



**5** *Next, extend shape of cove by removing waste with dado blade set at angle. Adjust rip fence and dado blade between passes as needed.*




**6** *Now the top, outside corner of each blank can be trimmed. To do this, tilt a regular saw blade 45°. Then sneak up on the final layout line.*

## Bracket Foot Pattern




Woodsmith GO ON-LINE EXTRAS To download a free full-sized pattern of this bracket foot template, go to www.woodsmith.com

*NOTE: Enlarge this pattern 200% for a full size pattern*

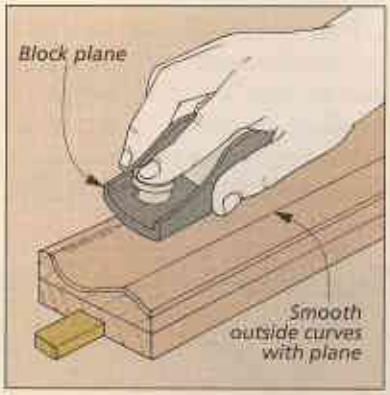
▲ *Hardboard makes a good, reusable template for the bracket feet profiles, see pattern at left. To position the template on the blank, just line it up with the cove you've already cut.*

## Face Profile: Clean-Up

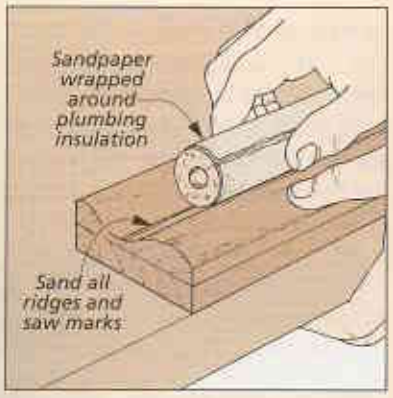
Up to this point, all the work at the table saw has been to get the face of the blanks to rough shape. Now it's time to clean up all the unwanted shoulder lines and saw marks left by the saw blade so that you end up with a smooth curve on the face profile.

This is where the handwork of making bracket feet comes in, and you'll find there's really not much to it. Each blank only has a little material left to remove, and the profiles drawn on the ends will guide you. But don't be too critical. The bracket feet end up far enough apart so that no one will notice if the profiles aren't exactly identical.

**OUTSIDE CURVES.** The areas that need the most shaping are the outside (convex) curves at the top and bottom of the feet, I shaped them with a block plane set to take a thin shaving, as shown in Step 7. (But you can also get the job done with a rasp or a Surform-type plane, which looks like a block plane but works like a rasp.) Start by smoothing out the noticeable shoulders. Then simply keep taking thin shavings, following the profile drawn on the end.




**7** *On the blank's outside curves, plane any hard lines, removing enough waste to create a gentle curve that matches the layout on the ends.*




**8** *Once the ridges have been planed away, smooth out the curve using a piece of sandpaper wrapped around a short length of plumbing insulation.*

**INSIDE CURVES.** The inside curves are even easier. All you need to do is sand or scrape them (Step 8). I wrapped sandpaper around a length of plumbing insulation. It provides just enough support *and* flexibility to sand the curve efficiently.

## Miter & Spline Joint

Now that the profile of each blank is complete, they can be cut into individual pieces and one end of each *front* piece can be mitered.

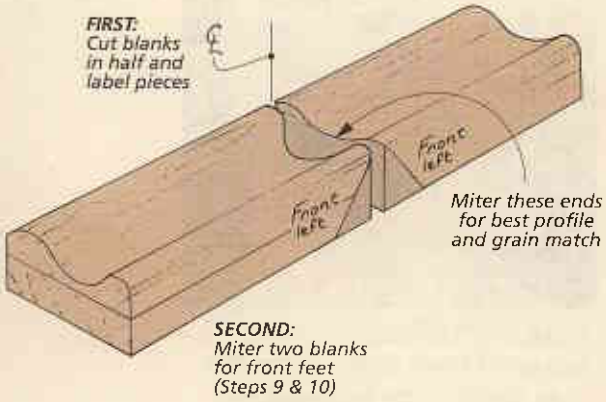
**LABEL BLANKS.** But before you get started, it's a good idea to label the pieces, as shown in the drawing below. For each front foot, you want to glue the ends you cut apart back together — this time joining them with splined miters.

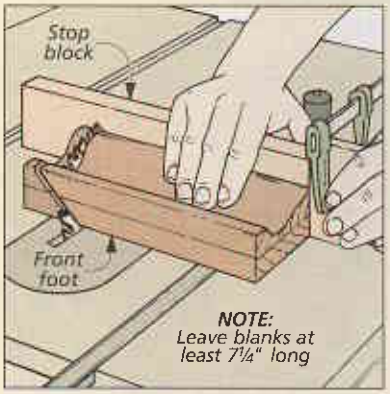
There are two reasons for doing it this way. For one thing, the grain on the faces of the halves will match up and "wrap around" the foot. Plus, since you have already done the final shaping, this technique will ensure the profile of the pieces match as closely as possible. (You may still need to do some light sanding after they're glued together.)

**MITER FRONT PIECES.** With the parts labeled and cut apart, the next step is to miter one end of each front foot piece, as shown in Step 9. The nice thing here is you don't have to worry about an exact length. That will be taken care of when you create the scallop profile later. But I still added a stop block to the auxiliary miter gauge fence so the piece wouldn't shift as it was being pushed across the blade.

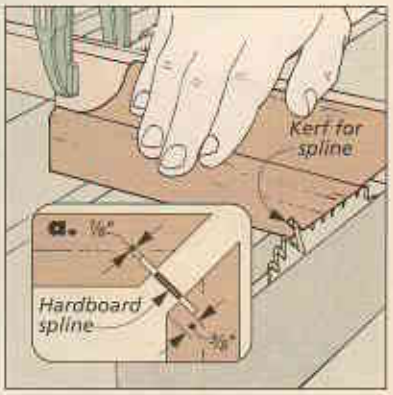
After mitering the pieces, I lowered the blade and repositioned the stop block to cut a kerf for a spline (Step 10). These splines are added mostly to keep the pieces aligned when you glue them together.

**BACK FEET.** Because a project like the bedside chest is usually against a wall, only the front feet are mitered. The back feet are simply supported with a small triangular brace in back (refer to Step 17).




**9** *With the profile complete, cut all the blanks in half. (See drawing at left.) Then miter the four pieces that will be used for the front feet.*




**10** *Now cut a ⅜"-deep kerf in each mitered end for a spline to help align the pieces. Then cut a ⅛" hardboard spline to fit in the kerf.*

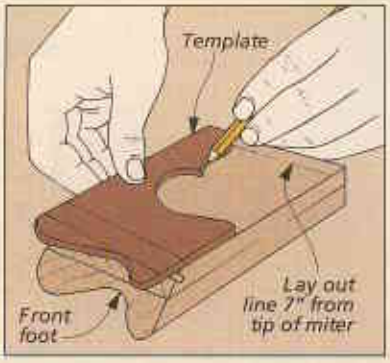
## Scalloped Profile

Before you can glue the feet together, there's still one more profile to cut. It's cut on the end of the blank (instead of on the face), and the work is done at the band saw and drill press (instead of the table saw). But the first thing to do is lay out the profile.

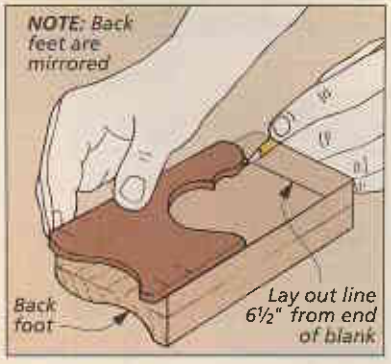
**LAY OUT PROFILES.** You've already made the template for this curve, refer to the pattern on page 19. But this time, the front and back legs are slightly different. The front feet are 7" long overall (Step 11), while the back feet are only 6½" (Step 12). For both feet, I laid out a line across the back side of each blank and then aligned the template with this line.

With the back feet, the thing to keep in mind is that they're *not* identical. With their contoured faces, they're mirrored images of each other, so make sure you end up with both a right and a left back foot.

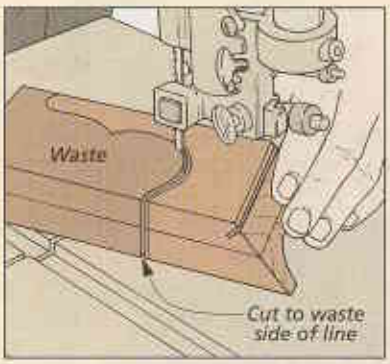
**SHAPE PROFILE.** These profiles are easier to create than the face profiles. I roughed out the profile at the band saw (Step 13). Then I sanded as much as possible with a drum sander (Step 14) before finishing them with a little hand sanding.



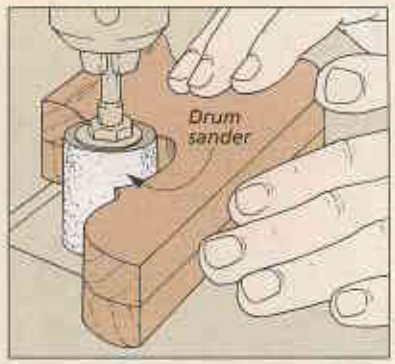

**11** *Transfer scalloped part of the pattern onto back side of the mitered pieces. Position the template so the feet will end up 7" long.*




**12** *Lay out scallop on each back foot blank so it will end up 6½" long. Flip template for second foot so back pieces are mirrored.*




**13** *Cut out scalloped shape on both the front and back feet using the band saw, staying to the waste side of the layout line.*




**14** *To complete the shaping of each foot, sand the scalloped profile to the layout lines, using a drum sander in the drill press.*

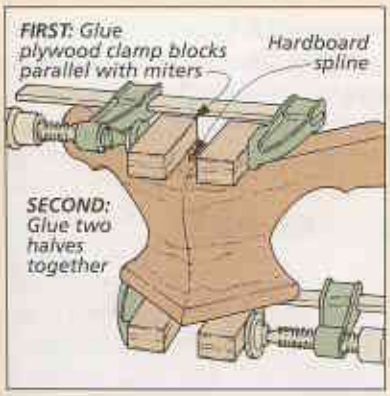
## Foot Assembly

Now that the profiles are complete, the feet are ready to be assembled.

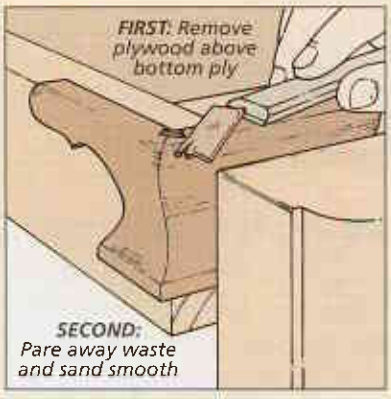
**FRONT FEET.** To join the halves of the front feet, I wanted to use clamps, but there's no good place to position them. So I glued small clamping blocks to the top and bottom edges parallel with the mitered end. And to make sure I could remove them easily, I used plywood for the blocks and liquid hide glue to attach them, as shown in the margin photo. The plywood can be split fairly easily between the bottom two plies, and then by applying a little hot water to the plywood, you can loosen the bond of the hide glue. Then the foot can be scraped clean, and the spline can be trimmed flush.

**BACK FEET.** For the back feet, I glued and screwed triangular braces to the back of the feet (Step 17). For more on this and on mounting the feet, turn to page 13. W

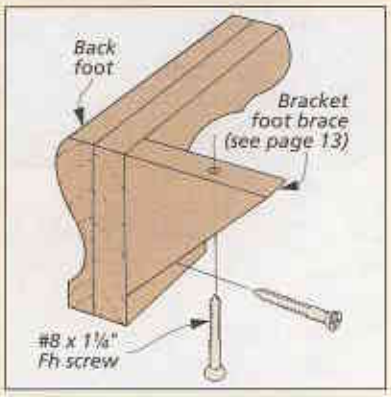
*These clamping blocks are plywood so they'll split easily along the plies. And they're glued in place with hide glue, which can be loosened with a little hot water.*



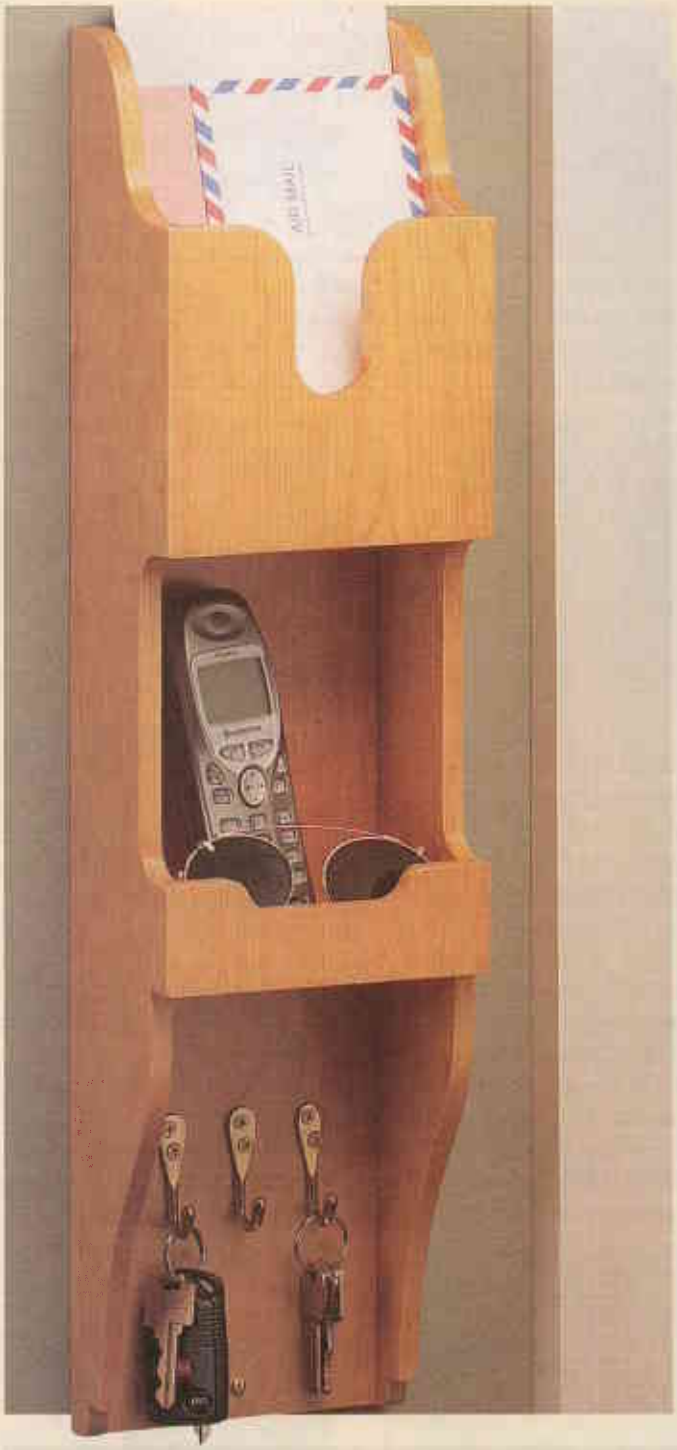

**15** *Using hide glue, attach clamping blocks to the pieces parallel to the mitered ends (see margin). Then glue halves together.*




**16** *To remove clamping blocks, pry away at bottom ply. Then loosen glue with hot water, pare away ply with chisel, and sand smooth.*




**17** *For back foot, make a brace and drill counterbored shank holes. (Use handscrew to hold brace.) Then glue and screw to foot.*



# LETTER & KEY RACK

*Simple joinery and low cost materials really deliver on this weekend project.*

It's a nice feeling to be able to start and finish a project in a day or weekend. And let's face it, not everyone wants to build a large bookcase or entertainment center. Plus, most of the time smaller projects can be more practical and get used on a day-to-day basis.

That's the case with this small wall rack. Not only does it have a spot for letters and keys. It also has plenty of space for other "pocket" items like sunglasses and cell phones.

And even though it's only made of seven parts, it was designed with several features that are worth noting. First, I used tongue and groove joinery to hold it all together. It's stronger than a butt joint or a plain rabbet joint but just as simple to make.

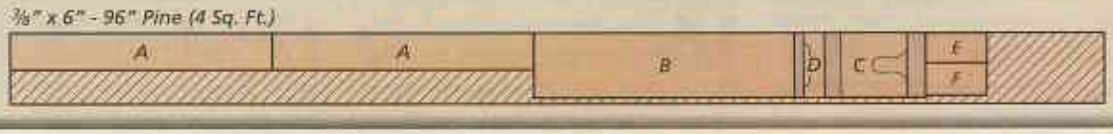
The curved details look nice, but they're not just for decoration. They make it easy to reach in and grab what you need. Best of all, they are simple to make, and I'll show you how to get a perfectly matched set of sides. Along with the patterns on the opposite page, there are free full-size patterns you can download from our website. (See Online Extras on page 35.)

To top it all off, the materials don't require a large investment. This project can be made from only one board or could easily be made from leftover pieces too big to toss out.

## MATERIALS, SUPPLIES, & CUTTING DIAGRAM

| | | | | | |
|---|---|---|---|---|---|
| **A** | Sides (2) | 3/8 x 3 1/8 - 22 | **E** | Upper Bin Divider (1) | 3/8 x 3 1/8 - 5 1/8 |
| **B** | Back (1) | 3/8 x 5 1/2 - 22 | **F** | Lower Bin Divider (1) | 3/8 x 2 3/4 - 5 1/8 |
| **C** | Upper Bin Front (1) | 3/8 x 5 1/2 - 5 | • | (2) #8 x 1 1/4" Fh Woodscrews | |
| **D** | Lower Bin Front (1) | 3/8 x 5 1/2 - 1 3/4 | • | (3) 1 7/8"-long Mug Hooks w/Screws | |

*3/8" x 6" - 96" Pine (4 Sq. Ft.)*



## Sides

The sides are the foundation of this project so that's where I started. Begin by cutting each *side (A)* to finished length and width, as shown in Fig.1.

Once that's done, it's a good idea to lay out the final shape of the sides directly on each workpiece. This helps to keep the pieces oriented correctly when cutting the joinery.

After laying out the patterns, you can turn your attention to the joinery. Each side piece has a tongue on the front and back edges. Later, grooves will be cut on the front and back pieces to fit over these tongues.

**TONGUES.** There's nothing tricky about making the tongues. All you have to do is rabbet the outside face of each piece. I used the table saw with a dado blade buried in an auxiliary fence, see Fig. 2.

**DADOES.** Once the tongues are complete, you're ready to cut the dadoes for the top and bottom dividers. Here again, I used a 3/8" dado blade. But this time, I attached an auxiliary fence to the miter gauge and added a stop block to keep the pieces from shifting.

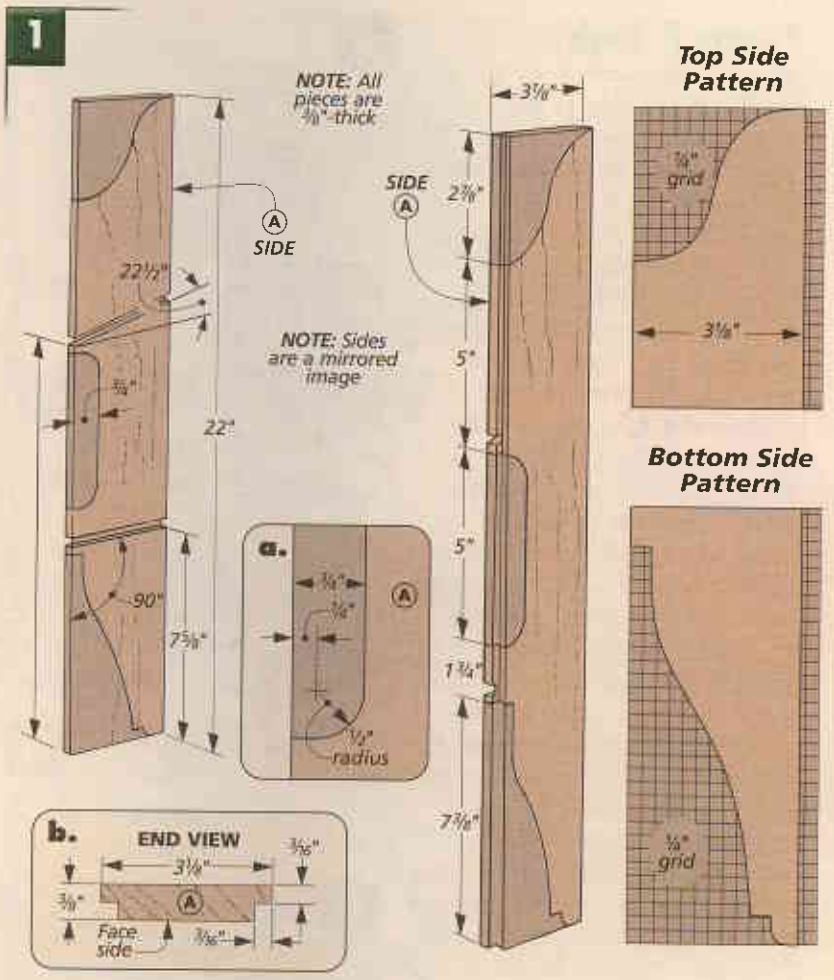
The dado for the lower divider is straightforward. It's a 90° cut on the *inside* face of each side (Fig. 1).

But the dado on the upper divider is a bit trickier. It's angled, so you need to cut a mirrored set of dadoes. To do this, rotate your miter gauge 22½°, as shown in Fig. 3. Then cut *one* side at this setting.

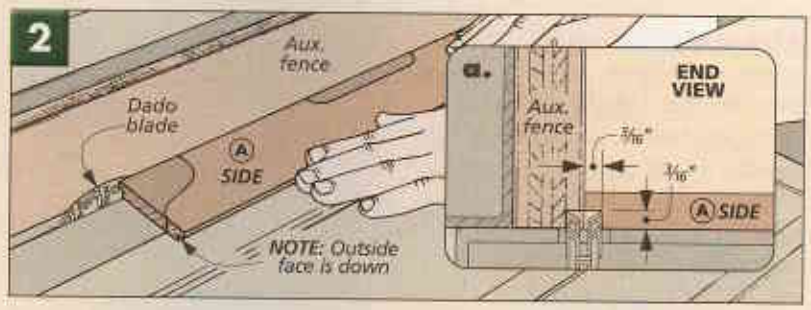
To cut the matching dado on the other side piece, move the miter gauge to the other side of the blade and adjust it 22½° in the opposite direction and reset the stop block.

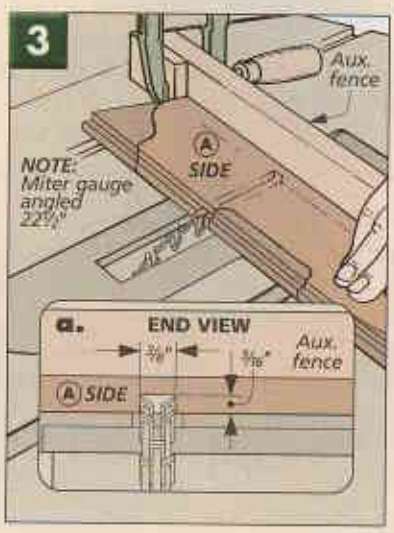
**CURVES.** Now it's time to cut the curved profile you laid out earlier. As you can see in Fig. 4, I like to cut both of the side pieces at the same time to ensure a matched pair. To do this, I used double-sided tape to join them together. Just make sure the dadoes are facing each other.

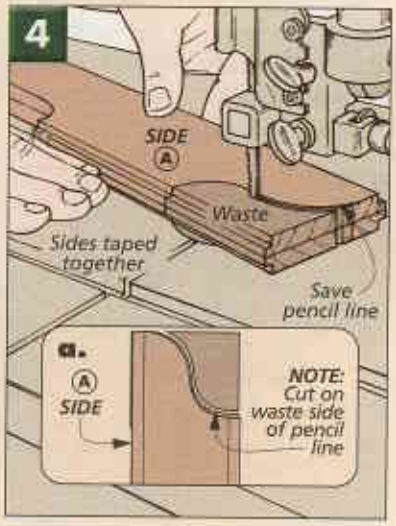
The curves can be cut with a band saw, scroll saw, or jig saw (Fig. 4). Then sand the edges smooth with a drum sander. But you'll still need to hand sand the lower detail of the sides, see margin photo.




Full-Size Patterns. To download free full-size versions of the patterns shown here, visit our website at: www.Woodsmith.com. Note: If you don't have access to the internet, refer to page 35.



*A small sanding block takes care of sanding those tight curves at the bottom of the side pieces.*

## Fronts & Back

With the sides complete, you can turn your attention to making the three pieces that sandwich the sides: the back and two bin fronts, as shown in Fig. 5.

All of the pieces have grooves to match the tongues on both sides. But where the back is just a simple rectangular piece, the bin fronts each have a decorative cutout (more on that later).

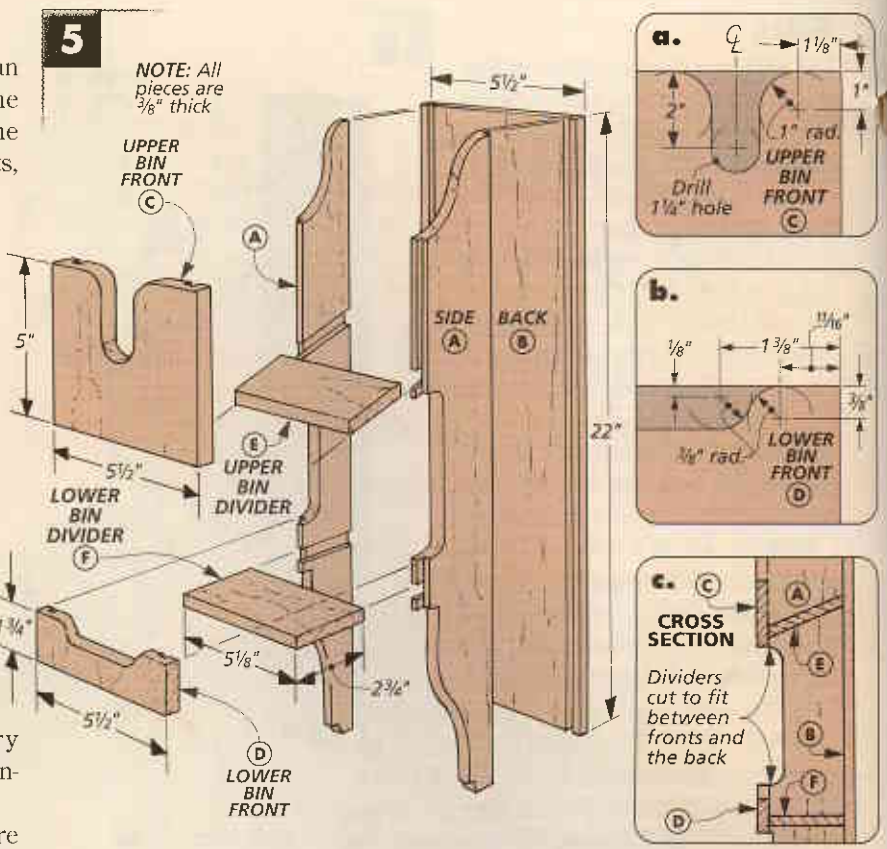
Since all these pieces are the same width (5½"), I decided to make them from a single, long blank. (Mine was 32" long.)

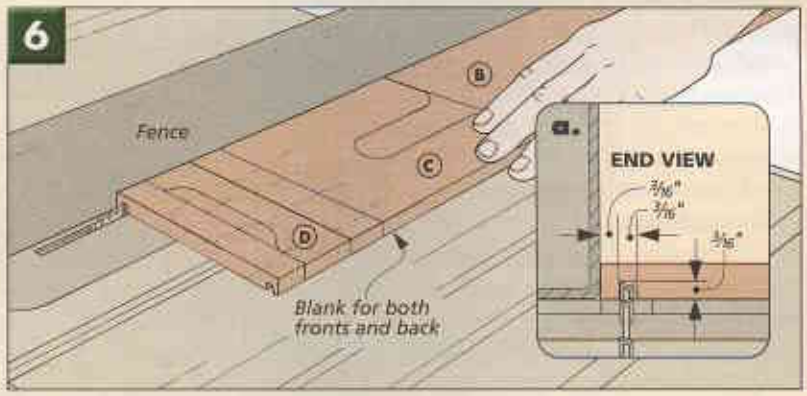
There's a couple of advantages to doing this. First, a larger workpiece is easier and safer to handle while running it through the saw. And second, you'll be able to cut the grooves for the tongue and groove joinery all at once. This helps ensure a consistent groove in all of the pieces.

**GROOVES.** Since these grooves are only 3/16" wide (too narrow for a regular dado blade), I used a normal ⅛"-wide blade, as shown in Fig. 6a.

To make the grooves, start by setting the rip fence 3/16" from the edge of the blank, see Figs. 6 and 6a. After making the first cut on both edges of the blank, nudge the fence away from the blade and sneak up on the final width. Test the fit as you go until the grooves fit the tongues.

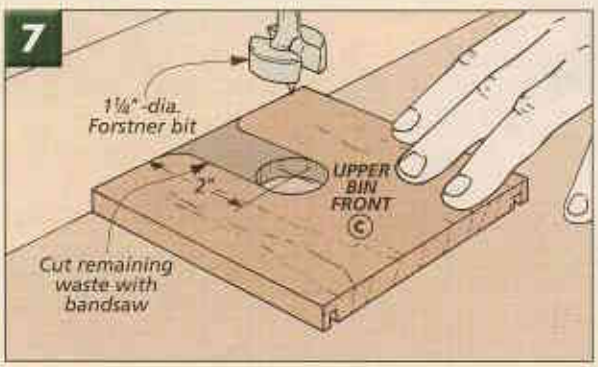
**FRONTS.** Once the grooves have been completed, the *back (B)*, and *upper (C)* and *lower bin fronts (D)* can be cut to finished size, as you can see in Fig. 5. You don't need to do anything more to the back piece at this point. But there are some decorative cutouts to make on the upper and lower bin fronts.

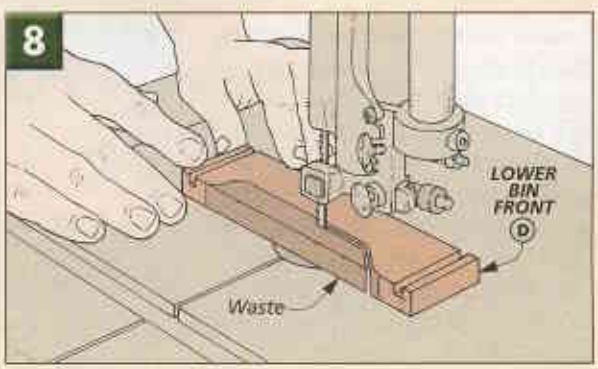



On the *upper* bin front, the cutout is made in two steps. First a 1¼"-dia. hole is drilled 2" from the top, as you can see in Fig. 7. (I used a Forstner bit.) Then the rest of the profile is cut out on a band saw and sanded smooth on a drum sander.

The shallow curves on the lower bin front are laid out with a quick tip. I like to lay out small arcs, like the ones in Fig. 5b, with an ordinary penny. Then cut the profile (Fig. 8).



## Dividers

The *upper bin divider (E)* and *lower bin divider (F)* are the last pieces to be made. The lower bin divider is simply ripped and cut to length (Fig. 5). But the front and back edges of the upper bin divider have to be beveled to fit tight against the front and back.

**BEVELS.** To make these beveled cuts, I tilted the table saw blade 22½° to match the dadoes in the sides (Fig. 9). But I should mention a couple of things about this setup.

What you want to avoid with this cut is to have the waste piece fall onto the saw blade and kick back. And since the blade on my saw tilts to the right, I had to move my fence to the left side of the blade to make this cut, as shown in Fig. 9. (If your blade tilts to the left, you can leave the fence on the right side.)

Regardless of which way your blade tilts, you'll want to add an auxiliary fence to the rip fence. This prevents the first bevel from getting stuck under the rip fence when you flip the piece over to cut the second bevel, as in Fig. 9a. (Sneak up on this second bevel to get a good fit.)

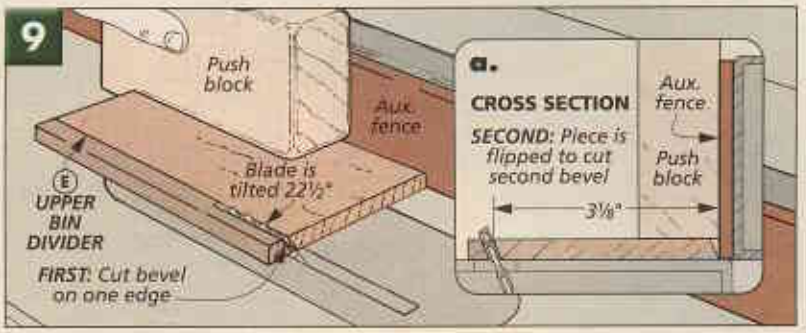
With the bevels cut, all that's left is to crosscut the dividers to length to fit between the sides (Fig. 10).

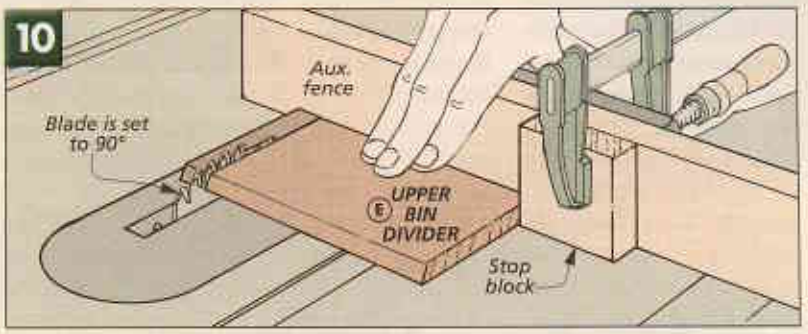
**ASSEMBLY.** This project might seem tricky to glue up all at once, but it's not. First I set the back on my bench and then glued the sides in place. Next, after applying a drop of glue to the dadoes, the dividers are slid into place. Finally, the bin fronts are glued on to the sides (Fig. 11).

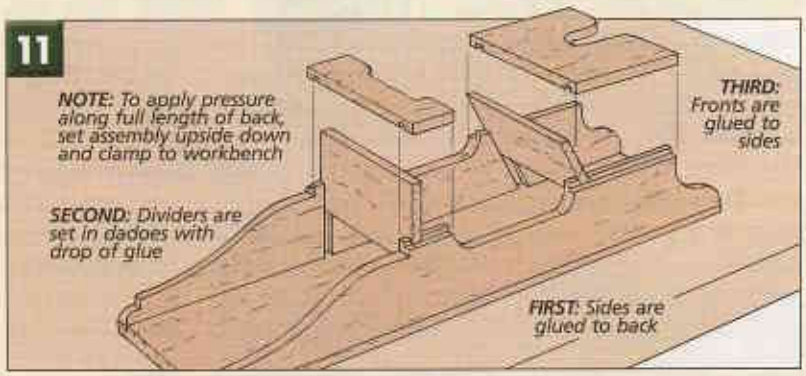
After all the pieces are assembled, it's just a matter of flipping it over and clamping it down to a flat surface, like a workbench. This will provide even clamping pressure along the entire length of the back.

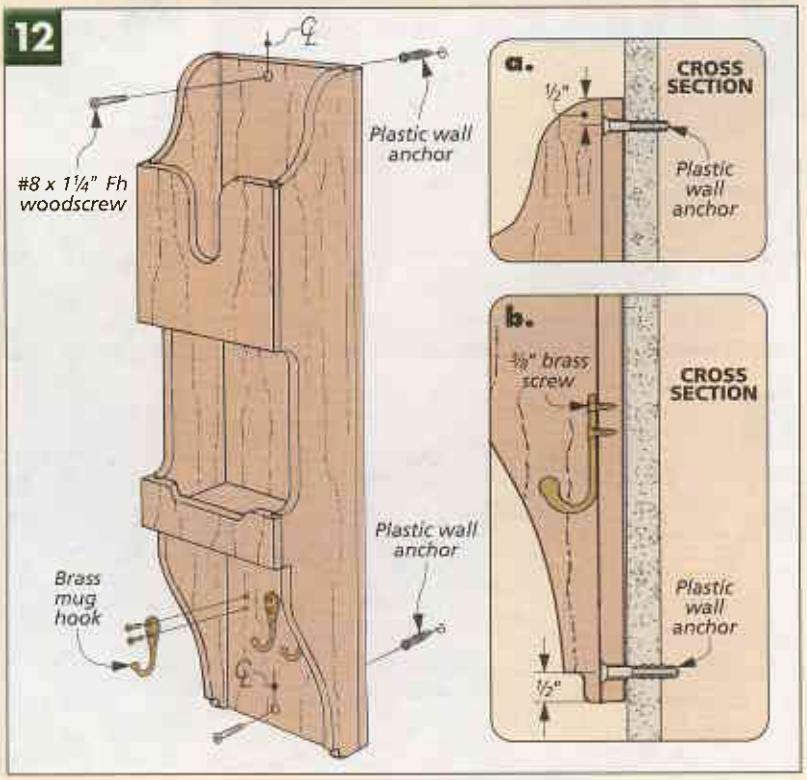
**HARDWARE & HANGING.** One of the reasons I made this project was to help me keep track of my keys. The key rack at the bottom is simply a set of three small brass mug hooks mounted in a row (Fig. 12b).

To hang the rack on the wall, I first drilled mounting holes at the top and bottom (Fig. 12). Then using wall anchors, I mounted it to the wall with two screws. W



▲ *Small brass hooks are used for hanging key chains.*

# SHOP NOTES

## Fitting Center Drawer Guides

▲ *The drawers in the bedside chest (page 6) slide on a wood guide system under the drawers. The runners in the case are straightforward. The guides under the drawers required a bit more fitting.*

Under the drawers of the bedside chest (page 6), there are thin guides that fit over the runners inside the case, see photo at right. Positioning these guides correctly is important because it affects how well the drawers will slide.

**NOTCH.** Before you begin working on the guides, you'll need to cut a notch in the back of the drawer, as in Fig. 1 below. After laying out the notch centered on the back, bottom edge of the drawer, I made two vertical cuts 3/16" down with a hand saw. Then I removed the waste with a chisel, scoring the bottom edge of the notch and paring down to remove the waste (Fig. 1a). The next step is to widen its "mouth," as you can see in the photo in the left margin.

**GUIDES.** At this point, you can start on the drawer guides, as in Figs. 2 and 3. I planed some stock to 5/16" thick so the pieces would fit under the drawer bottoms.

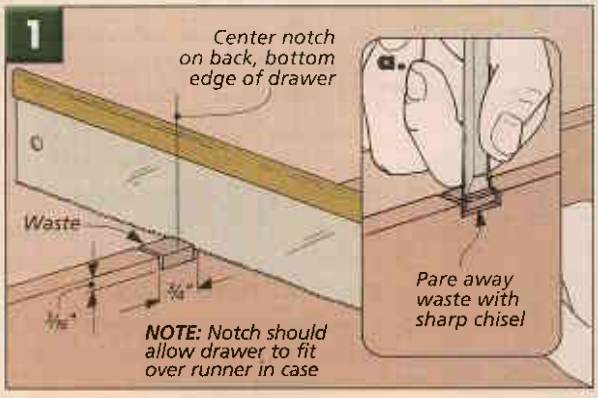
Each guide needs a centered groove so it'll slide easily over the runners in the case. I cut this groove by making two passes over a dado blade, flipping the guide between passes (Fig. 3). And it's not a bad idea to sneak up on the final width of the groove.

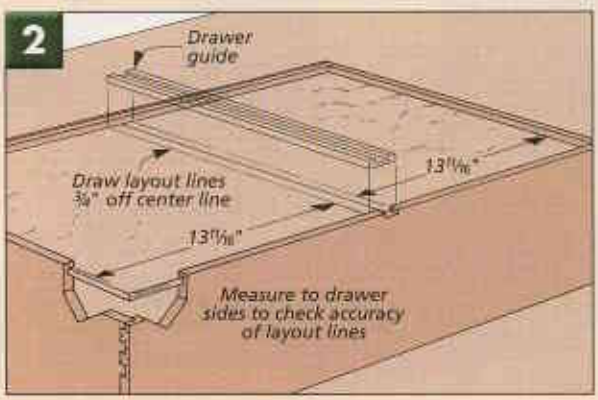
But you'll find that the dado blade will tend to lift the thin piece up off the saw, so to keep it pressed down safely, I made a long push block, as in Fig. 3.

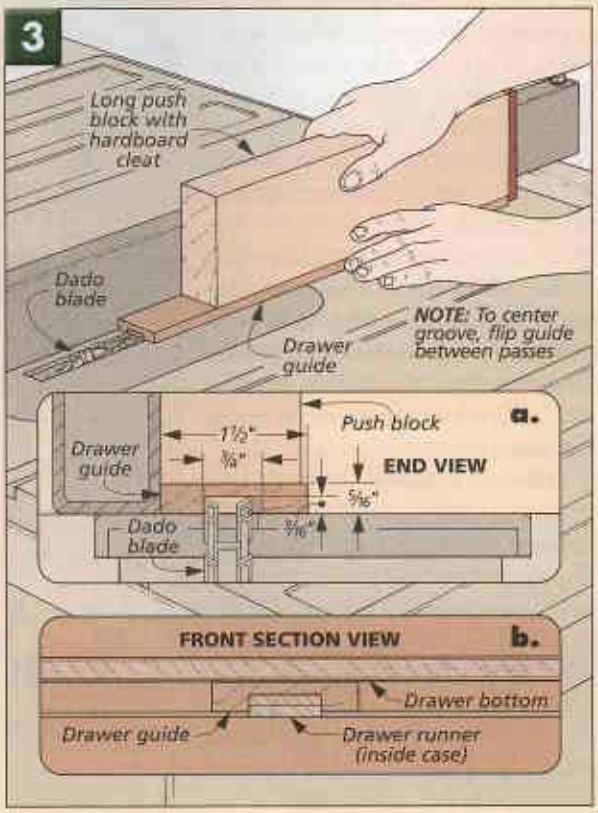
**MOUNT GUIDES.** The last step is to mount each guide to its drawer. To do this accurately, first draw a centerline on the drawer bottom and then measure 3/4" in both directions to lay out the edges of the guide. (I drew them using a square and checked that they were centered by measuring out from each line to the drawer side, as shown in Fig. 2.)

To double-check the layout lines, I centered the drawer in its opening and looked underneath to make sure the lines were centered over the drawer runner. Then I glued the guide to the drawer bottom, using a heavy object to apply pressure. W

▲ *A flared notch in the bottom edge of the drawer makes it easier to "feed" the drawer guide onto the runner in the case.*



## Routing A Straight Edge

Usually, cutting a straight line is easy, and cutting curves is a challenge. With the base of the keepsake box on page 28 and the optional base for the bedside chest (page 13), it's the other way around.

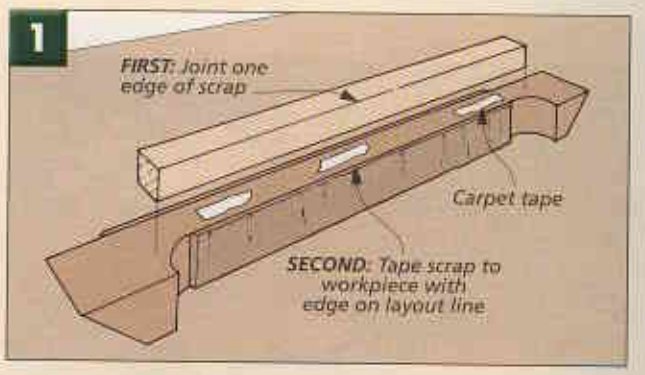
Once the profiles have been laid out, they can be cut to rough shape on the band saw. A drum sander will work to bring the curves to final shape. But it's next to impossible to sand a straight line with a drum sander. So instead, I used a flush trim bit in the router table.

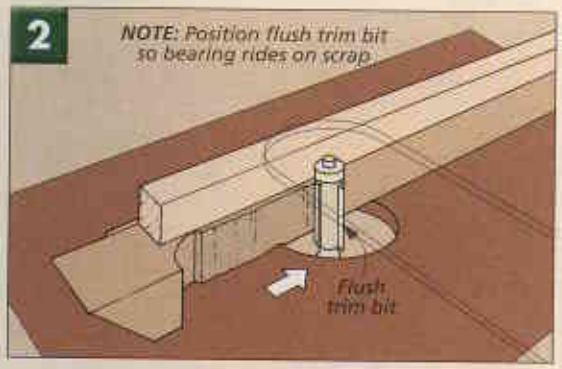
The secret is providing a straight surface for the bit to ride on. As you can see in Fig. 1, this is done by fastening a straight piece of scrap along the layout line.

Then adjust the height of the bit to ride on the scrap, as shown in Fig. 2.

Note: For the optional base of the bedside chest, you'll need to stop the flush trim bit just short of the ends so you can clean up the inside corners with a sharp chisel. W

▲ *To cut a perfectly straight line between the curves on the ends of this base, all you need is a flush trim bit and a straight piece of scrap.*

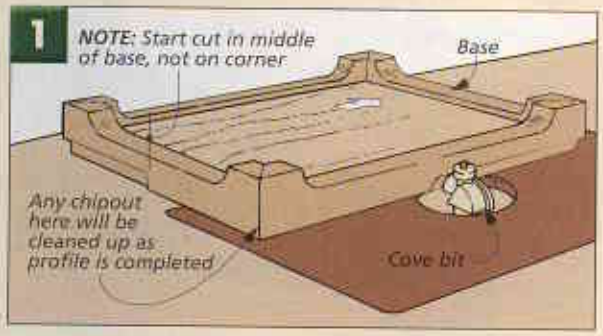



## Chip-Free Corners

When routing a profile around assembled frames (like the base and lid of the keepsake box), the bit will often create a little chipout at the corners. With the first three corners, you can clean up any chipout as you begin routing the adjacent edge. But if the last corner chips out, you're out of luck.

Here's an easy solution. Start routing at the center of one of the edges, as shown in Fig. 1. This way, when you get to the last corner, you'll still be able to clean up any chipout when you complete the profile on the first edge. W




## Applying Veneer

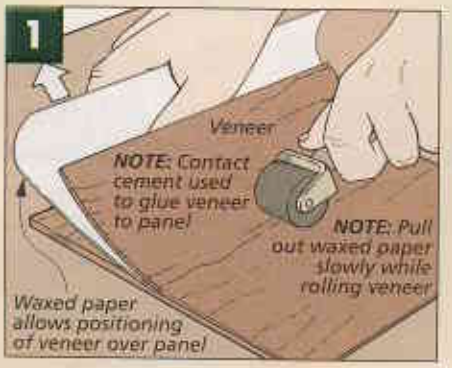
A piece of highly-figured veneer that I'd been saving was perfect for the lid of the keepsake box on page 28. I wanted to make sure the veneer pattern ended up centered on the lid, so I used contact cement to glue it to the lid panel.

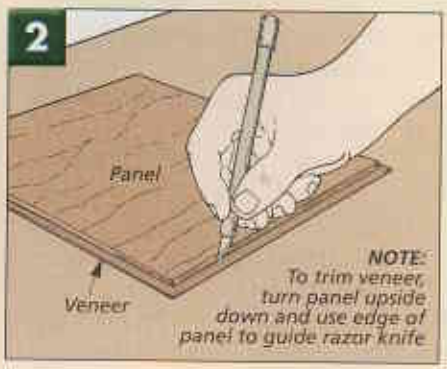
The benefit of using contact cement is that once the pieces touch, they won't slip, as they might with a liquid glue. Of course, that means the pieces *must* be in the right positions before they're pressed together.

One way to do this is to put a piece of waxed paper between the panel and the veneer, like you see in Fig. 1. This way, you can position the veneer over the panel before pulling the waxed paper out slowly.

Once the pieces have made contact, firm pressure from a roller ensures a tight bond.

The edges of the veneer can be trimmed cleanly by turning the panel upside down and running a razor knife along the edges of the panel (Fig. 2). W

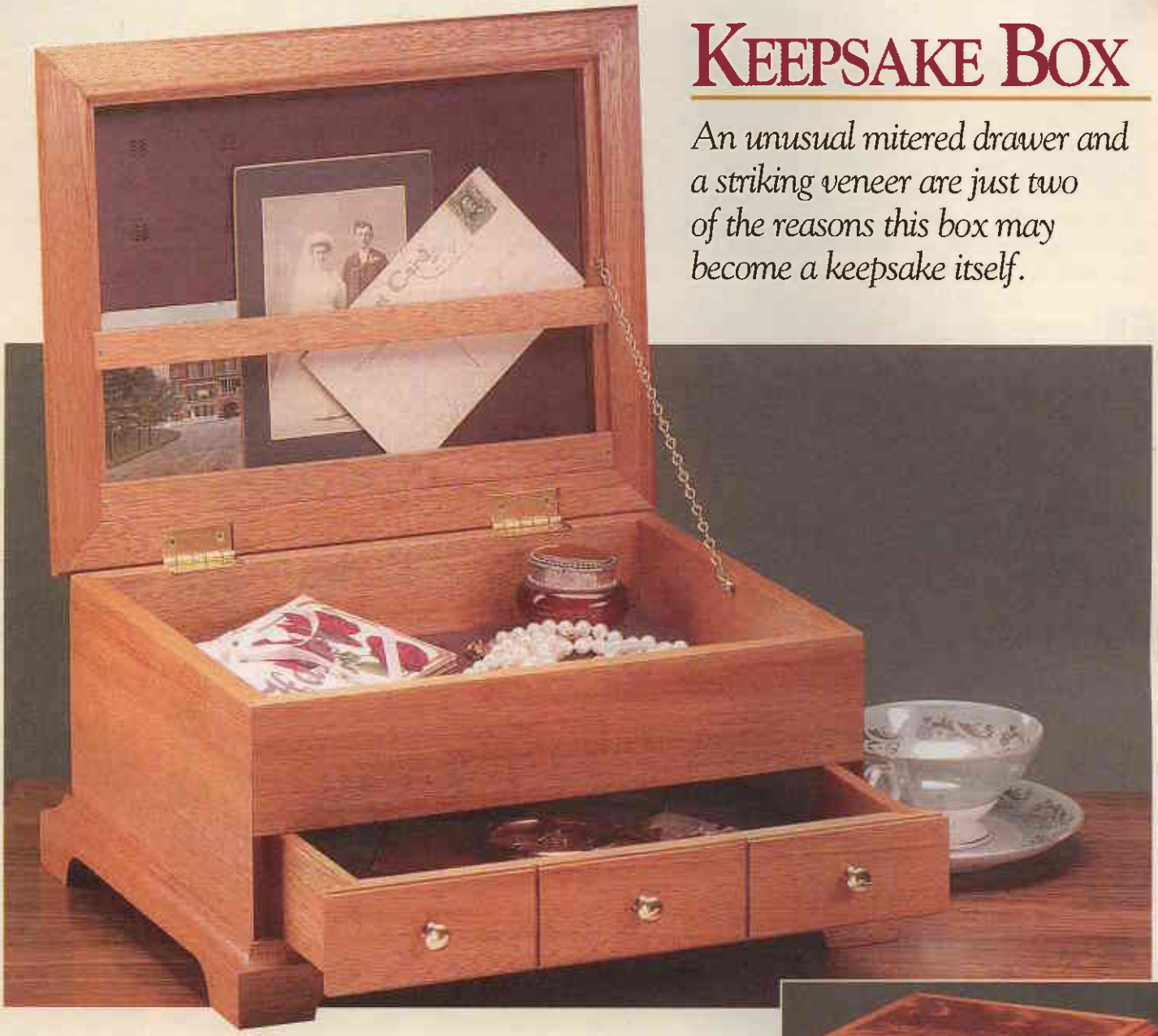


▲ *To select the best-looking area from a sheet of veneer, cut a mask the same size as the lid panel from a piece of cardboard.*

# KEEPSAKE BOX

*An unusual mitered drawer and a striking veneer are just two of the reasons this box may become a keepsake itself.*



Keepsakes remind us of special events and people. So why should those cherished mementoes be stuffed into a shoebox on a closet shelf? Instead, keep them close at hand and on display in this handsome box.

**STORAGE SPACES.** This box has lots of room for small treasures in the drawer and lidded compartment. Inside the thick lid there's a recess perfect for storing photos or letters.

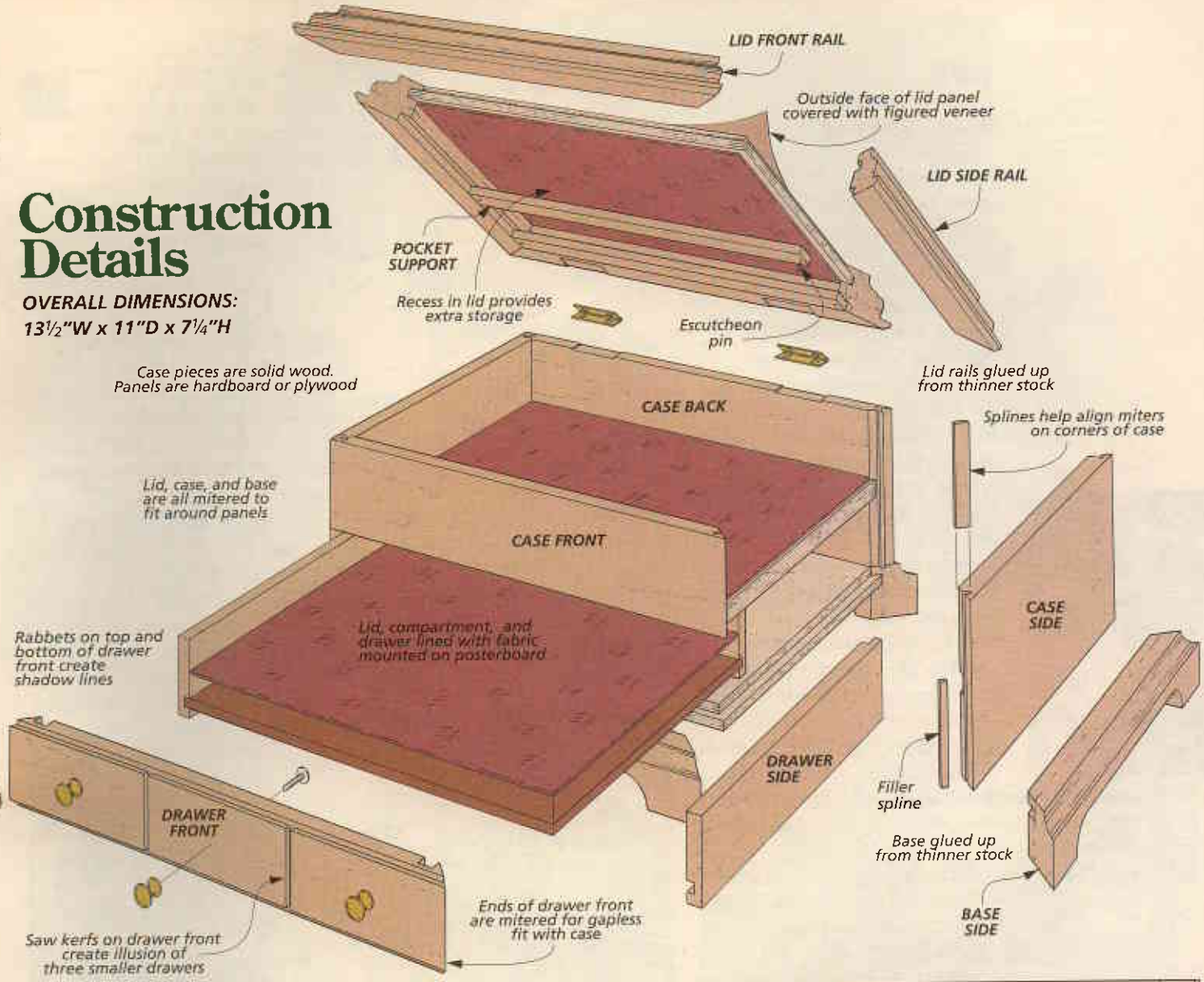
**MITERS.** The lid, base, and case of the box are all mitered frames that fit around panels. Even the ends of the drawer front are mitered so it will fit tight to the front of the case.

**WOOD.** I built my box out of mahogany with plywood panels inside. The lid panel is dressed up with a mahogany veneer. If veneering is new to you, there are details on page 27. For a finish, I used a tung oil varnish.

▲ *A series of saw kerfs create the appearance of three drawers and also form shadow lines above and below the drawer. The lid is accented with a mahogany burl veneer, and the profile is cut with a common router bit and a pass on the table saw.*

# Construction Details

**OVERALL DIMENSIONS:**
**13½"W x 11"D x 7¼"H**

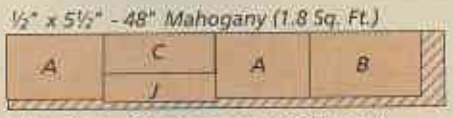



## MATERIALS, SUPPLIES & CUTTING DIAGRAM

| | | |
|---|---|---|
| **A** | Case Sides (2) | ½ x 4½ - 10 |
| **B** | Case Back (1) | ½ x 4½ - 12½ |
| **C** | Case Front (1) | ½ x 5 (rgh.)- 12½ |
| **D** | Case Bottom (1) | ½ ply. - 9¼ x 11¾ |
| **E** | Base Sides (2)* | 1 x 1½ - 11 |
| **F** | Base Front/Back (2)* | 1 x 1½ - 13½ |
| **G** | Base Panel (1) | ½ ply. - 9½ x 12 |
| **H** | Drawer Sides (2) | ⅜ x 2 - 9¼ |
| **I** | Drawer Back (1) | ⅜ x 2 - 11⅛ |
| **J** | Drawer Front (1) | ½ x 2 - 12½ |
| **K** | Drawer Btm. (1) | ¼ hdbd. - 9 x 11⅛ |
| **L** | Lid Panel (1) | ½ ply. - 8½ x 11 |
| **M** | Lid Fr./Bk. Rails (2)* | 1¼ x 1¼ - 13 |
| **N** | Lid Side Rails (2)* | 1¼ x 1¼ - 10½ |
| **O** | Pocket Supports (2) | ¼ x ¾ - 11 |

- (1) 9" x 12" (rgh.) two-ply veneer
- (2) 1½" x 1¼" Brass Hinges w/Screws
- (1) Lightweight Brass Chain, 8" Long
- (2) #4 x ⅜" Rh Brass Screws
- (3) ⅜"-dia. Brass Knobs w/Screws
- (4) ½" Brass Escutcheon Pins
- (3) Posterboard and Fabric Liners

½" x 5½" - 48" Mahogany (1.8 Sq. Ft.)



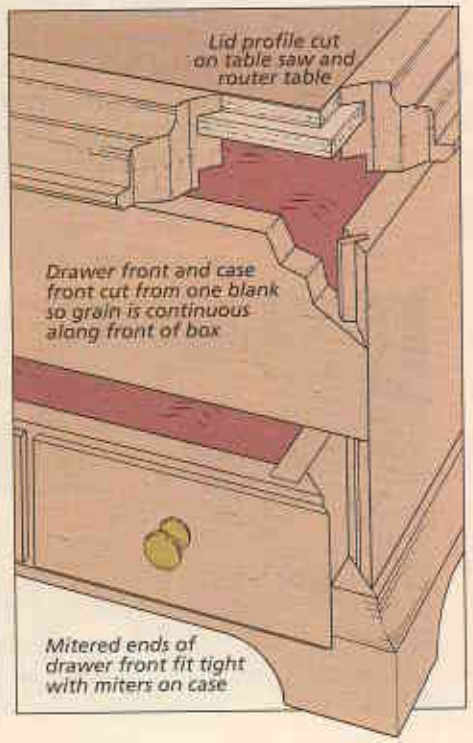

¾" x 3½" - 48" Mahogany (1.2 Bd. Ft.)

½" x 3½" - 36" Mahogany (1 Sq. Ft.)

¾" x 3½" - 36" Mahogany (Two Boards @ 1 Bd. Ft. Each)

***ALSO NEEDED:*** *½" plywood for lid panel, case bottom, and base panel, and ¼" hardboard for drawer bottom*

**Parts are resawn from two laminated pieces of ¾" stock*



## Case

I started work on the case first. What's unique about this case is that the bottom is centered in the assembly and divides the upper case from the drawer. And the case front is cut in half to create the drawer opening.

**CASE.** The *case sides (A)*, *back (B)*, and *front (C)* start out cut to rough length. But the front is left extra wide. The drawer front will be cut from the workpiece later, as illustrated in Fig. 1. This way, the grain pattern will match on the front of the box.

Next, each piece needs a groove that will hold a plywood bottom panel (Fig. 1). The grooves all need to be the same distance from the top edge. So I marked this edge on each piece and made sure it was against the fence as I cut each groove.

**MITERS.** After the grooves are cut, the pieces can be mitered to length. The pieces on opposite sides have to end up exactly the same length, so what I do is miter one end of each piece first. Then I fasten a stop block to an auxiliary miter gauge fence and miter the other end of one pair, as shown in Fig. 2. (The stop block will need to be repositioned before mitering the second pair.)

**FRONT.** Now the case front can be ripped to final width. Just set the rip fence so you end up with a ½" rabbet on the case front, like you see in Fig. 3. Set the cut-off piece aside to use for the drawer front later.

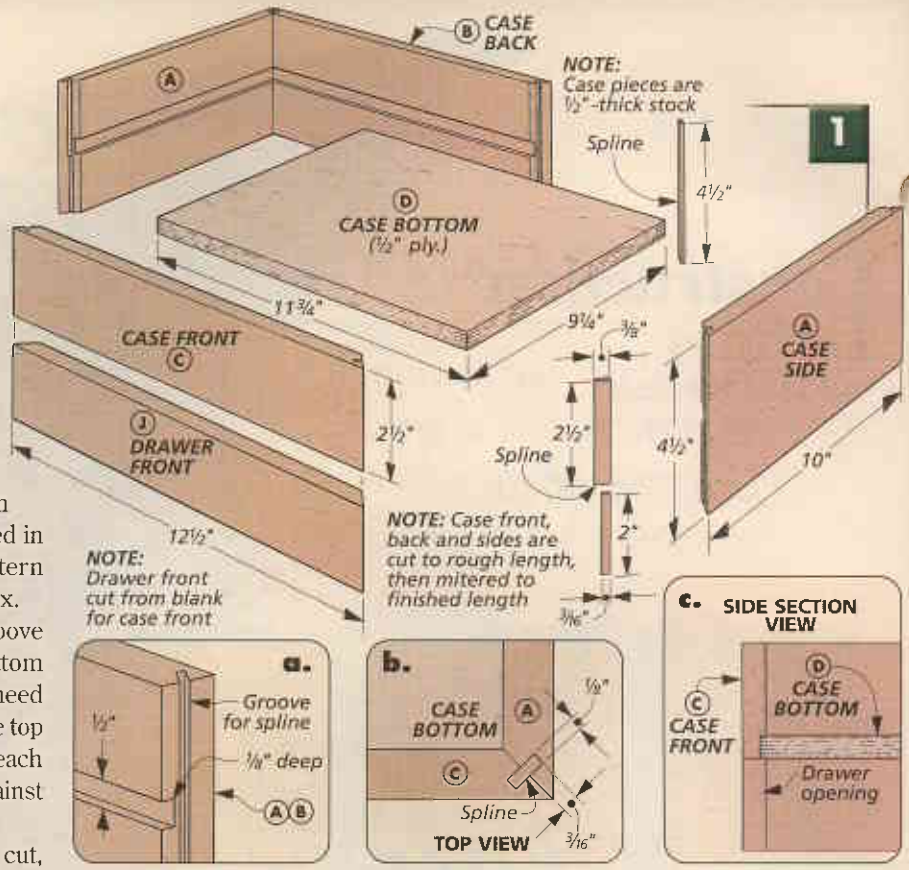
**SPLINES.** Assembling a mitered box can be like building a house of cards — there's nothing mechanical to hold things together. So I like to add splines to the joint to make the alignment easier (and the joint stronger).

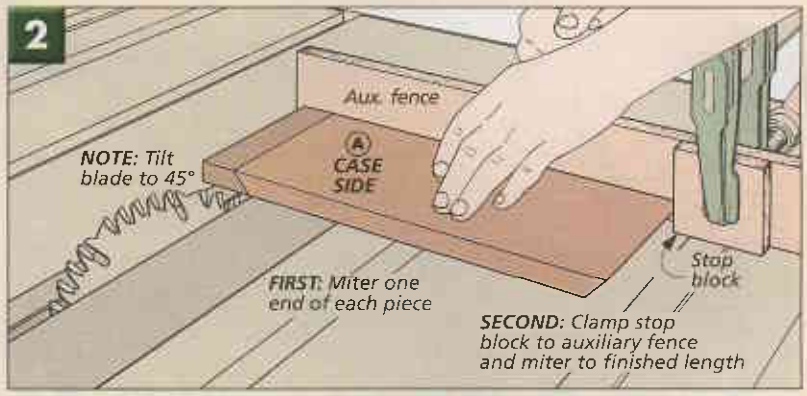
As Fig. 4 shows, the grooves for the splines are cut on the table saw. Just be sure they don't cut into the groove for the bottom (Fig. 1a).

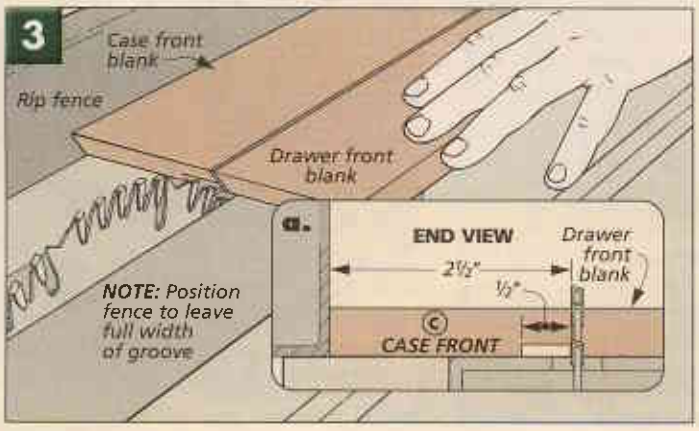
An easy way to cut the splines is shown in the margin photo. Then they can be cut to length (Fig. 1).

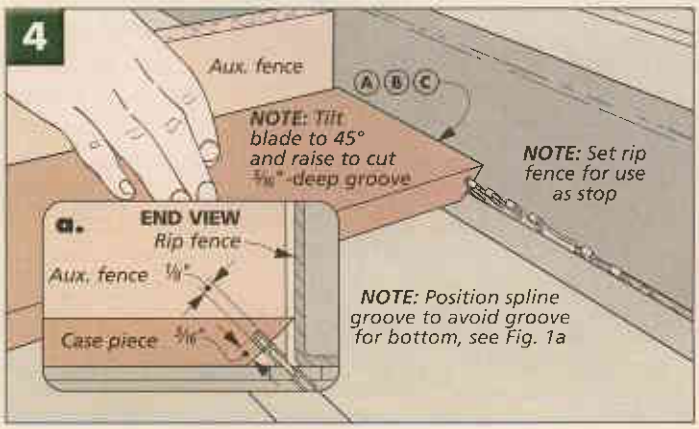
**BOTTOM.** The next thing to do is to dry assemble the box and measure for the *bottom (D)*. After it's cut to

▲ *When cutting splines for the miter joints, it's safer to rip them from a wide blank.*



size from ½" plywood (Fig. 1), the case can be glued together.

Once the case is assembled, you'll notice the exposed grooves in the side panels. As Fig. 1 shows, I filled these with splines, then trimmed and sanded them flush.

## BASE

The base is similar to the case in that it's also made up of four mitered pieces that fit around a panel. But other than the miters, the construction isn't quite the same.

**BASE FRAME.** If you take a look at Figs. 5 and 5a, you can see that the *base sides (E), front (F)*, and *back (F)* are 1" thick. I glued up blanks from thinner stock, then resawed them as shown in Fig. 6 so the joint line would be hidden by the case.

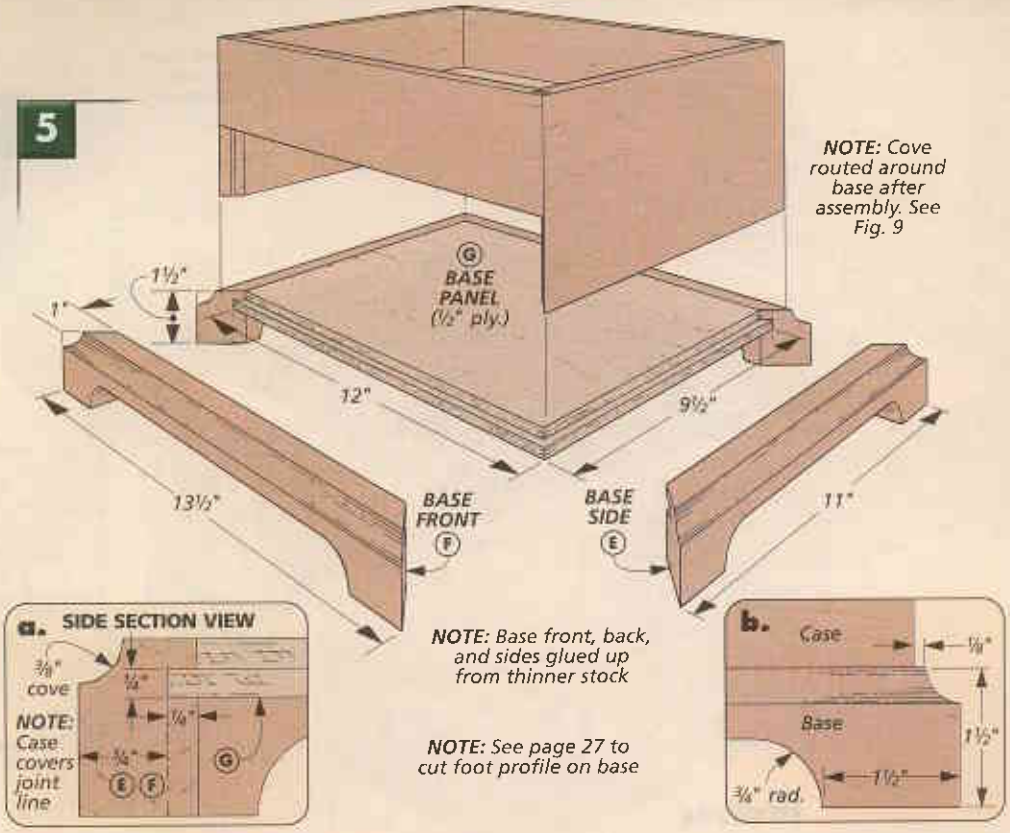
Like the case pieces, the base pieces are cut to finished width but to rough length. Then a groove is routed in each piece, like you see in Fig. 7. Later, a tongue on the bottom panel will fit into this groove. The idea here is to position the groove so the top of the panel will be flush with the top of the base (Fig. 5a).

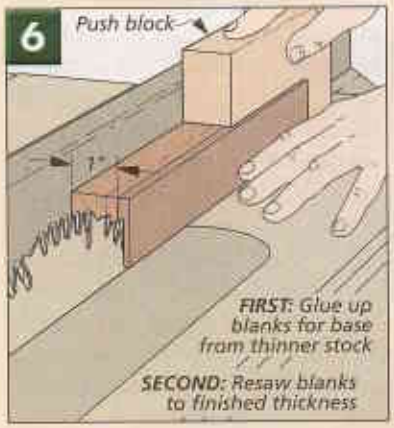
**BASE PANEL.** There's not much to the *base panel (G)*. It's just a piece of ½" plywood cut to fit between the grooves in the base. As Fig. 8 shows, a rabbet is routed around the panel to leave a tongue to fit the groove in the base pieces.

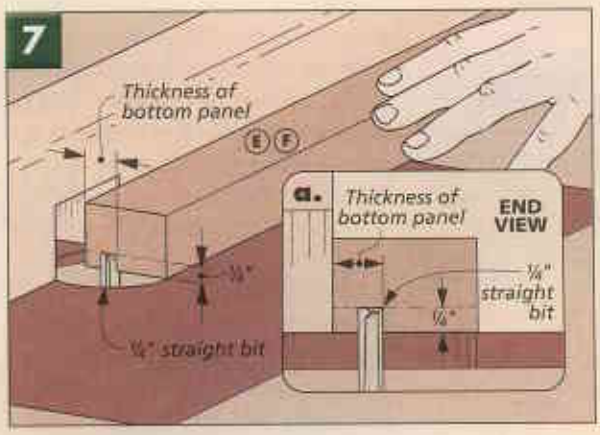
Once the tongues are cut, the base pieces can be mitered to length to fit around the panel.

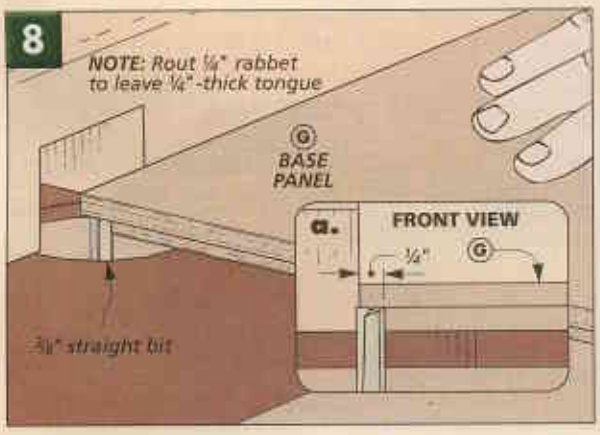
**FEET.** Before gluing up the base, a profile is cut in each piece to form a "foot" at each corner (Fig. 5b). I rough cut the profile on the band saw and sanded the ends on the drum sander. An easy way to clean up the straight portion of the profile is described on page 27. When the profile is completed, the base can be glued together.

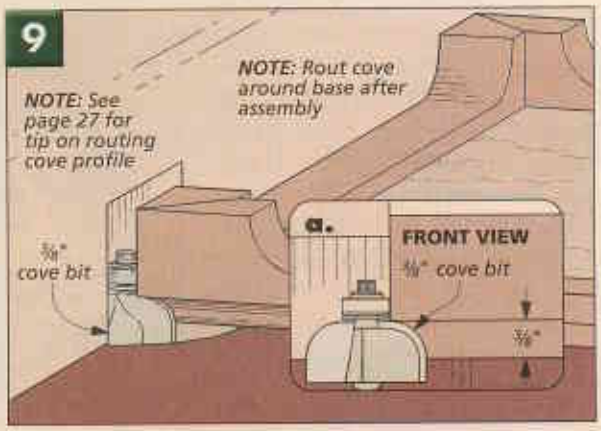
**COVE.** The last thing to do before gluing the case to the base is to rout a cove around the top edge, like you see in Fig. 9. There's a tip on page 27 that will help reduce chipout on the corners as you do this.

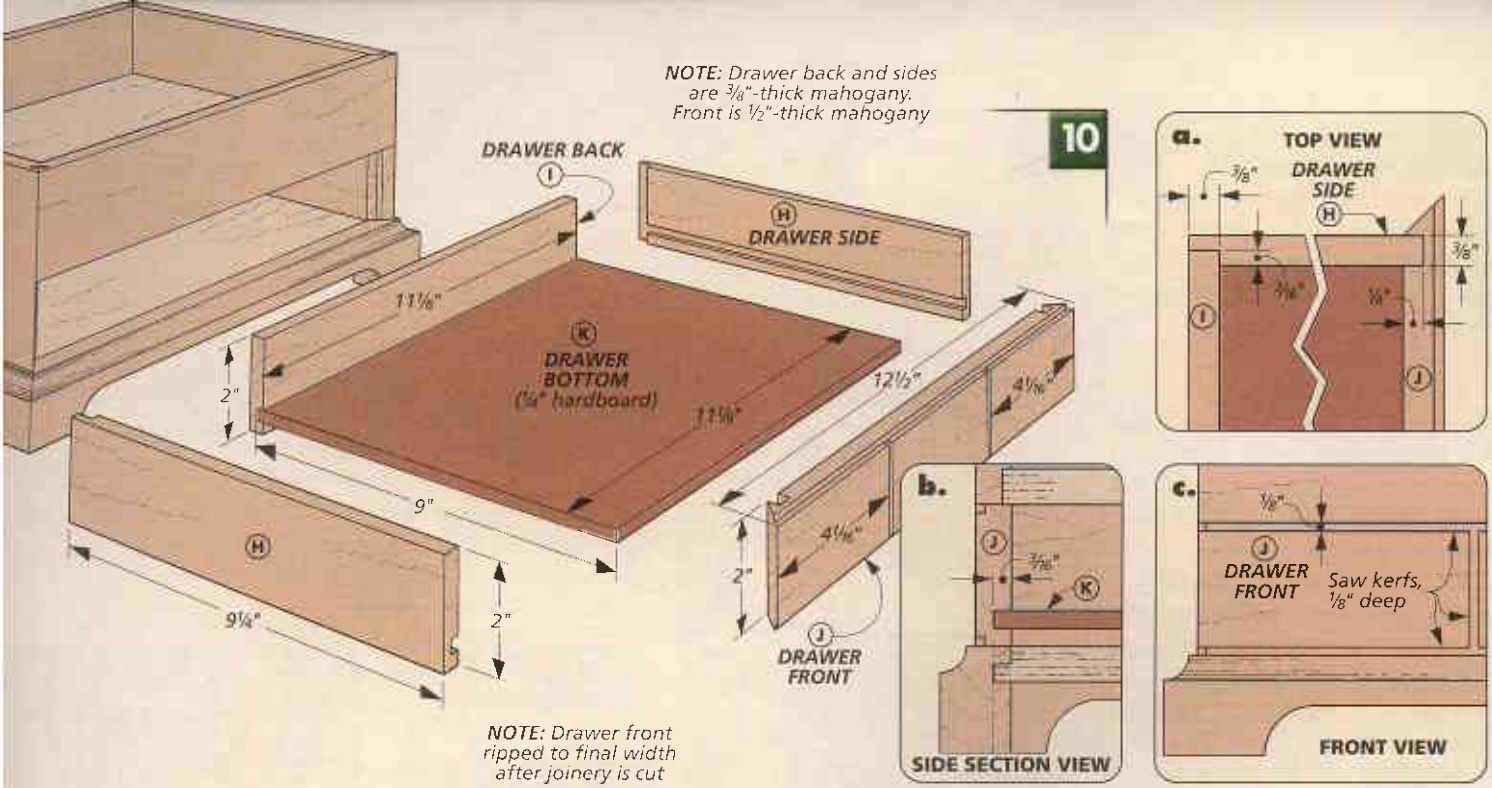





## Drawer

There are a couple of unusual things about the drawer. Most obvious is the mitered drawer front. Less obvious is the fact that the drawer is built to fit the exact width and height of the case opening. (Sanding the drawer sides provides room for it to slide.)

**SIDES.** Building the drawer is pretty basic. I started with the *drawer sides (H)*, as shown in Fig. 10. Their length allows for a gap between the drawer and the back of the case.

The *drawer back (I)* can also be cut to size (Fig. 10). To allow for the joinery, its length is ⅜" less than the interior width of the case.

**JOINERY.** I decided to cut the joinery next, before ripping the drawer front to width. This way, any chipout on the edges of the drawer front will be cleaned up as it's cut to size.

The drawer joints are simple to cut on the router table. First, a dado is cut across each end of the *drawer front (J)* so that its outside edge aligns with the inside corner of the miter, as illustrated in Figs. 11 and 11a. Then each side piece receives a rabbet to accept the back (Fig. 10a).

The bottom panel sits in a groove in each drawer piece (Fig. 10b). The grooves run the full length of the sides and back. But on the front, the groove stops at each dado so it won't show when the drawer is open.

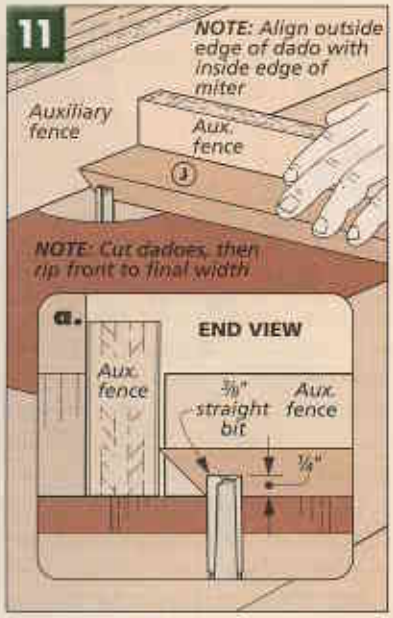
▲ *A sanding block helps you sand up to the miters on the drawer front. Sand both sides until the drawer slides into the case smoothly.*

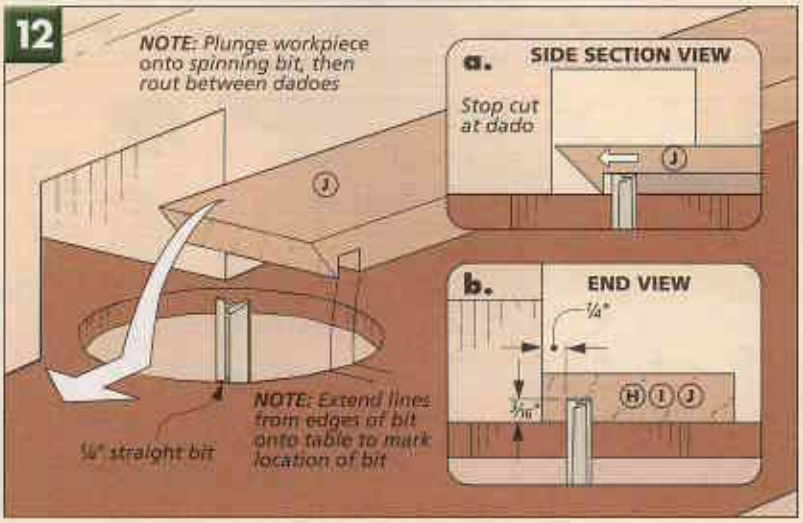
This doesn't require any special setup. All you have to do is plunge the piece onto the bit, as shown in Fig. 12, and stop the cut when you hear the bit reach the dado.

**FALSE FRONTS.** Before the drawer is assembled, there are still a few cuts to make, as shown in Fig. 10c.

Two kerfs on the drawer front create the illusion of three smaller drawers. These are cut on the table saw with the blade set ⅛" above the table. (I used a rip blade to get a flat-bottomed groove.)

After cutting the kerfs, I repositioned the rip fence to cut rabbets on the top and bottom edges of the drawer front. This creates shadow



lines that "separate" the drawer from the case and base.

**BOTTOM.** Now you're ready to cut a *drawer bottom (K)* to size from hardboard (Fig. 10), and glue the drawer together.

And finally, just sand the drawer sides so the drawer slides into the case easily (see margin photo on the opposite page).

## LID

Construction of the lid is a lot like that of the base. But this time, I started with the panel. That's because the panel is veneered, and you need to know the panel's final thickness before you can begin work on the frame that goes around it.

**VENEER.** As Fig. 13 shows, the *lid panel (L)* is a piece of ½" plywood with mahogany veneer applied to the outside face. There's more about veneering on page 27.

After the veneer is in place, the panel can be set aside while some work is done on the rails.

**RAILS.** Like the base pieces, the *lid front (M)*, *back (M)*, and *side rails (N)* are built up from thinner stock. And positioning the thicker piece on top helps conceal the joint line in a flat portion of the profile (Fig. 13a).

After the rails have been ripped to width (Fig. 13a), I made two cuts on the inside face of each one. The first is a groove to accept a tongue that will be cut on the lid panel (Fig. 14).

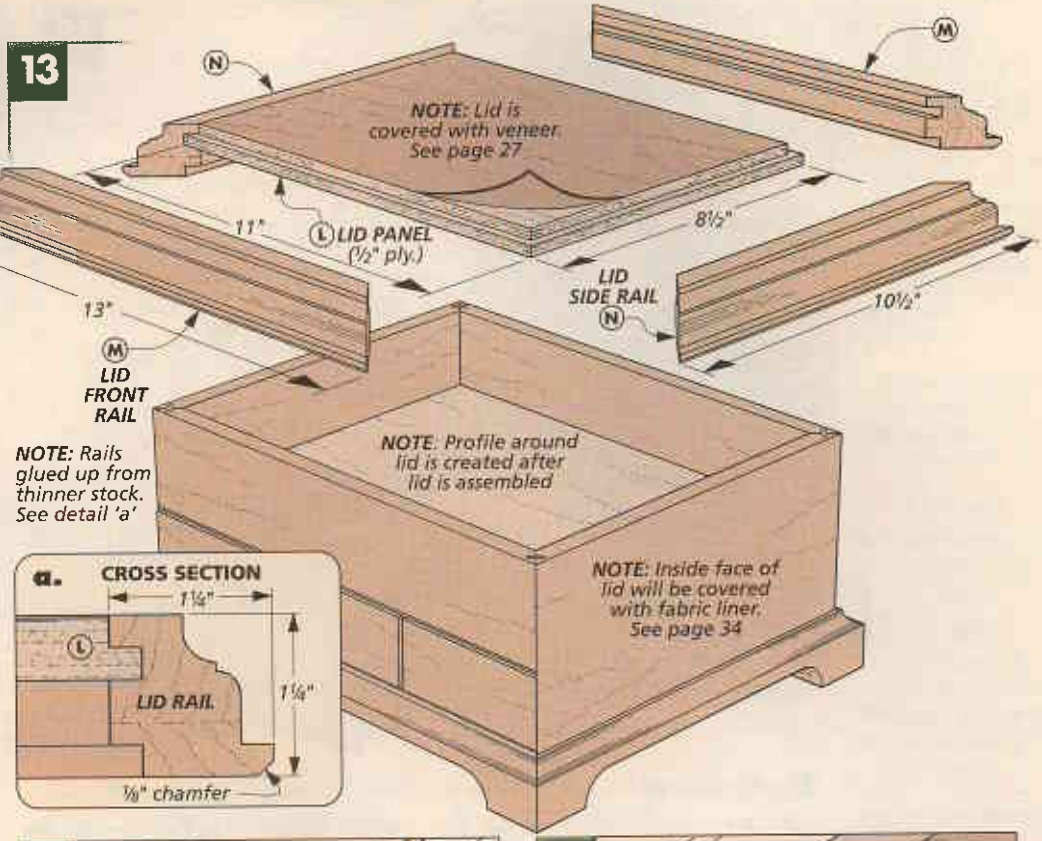
Then you can reposition the fence and use the same bit to cut a rabbet along the bottom, inside edge. This rabbet will accept a couple of pocket supports added to the lid later.

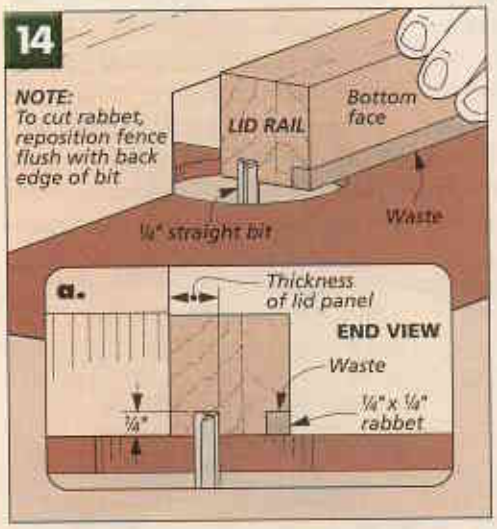
All that's left now is to create a tongue around the panel to fit the groove and glue the lid together.

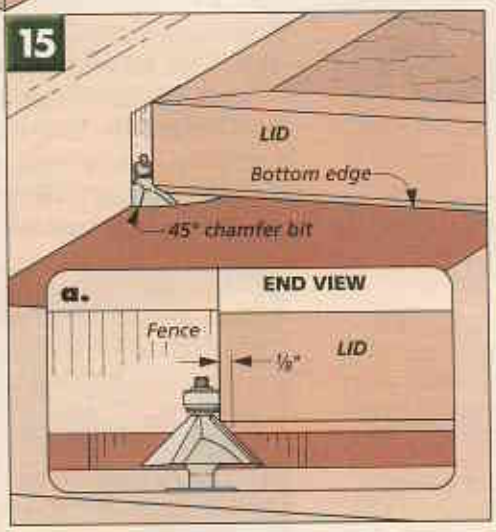
**PROFILE.** With the lid assembled, you can start on the edge profile.

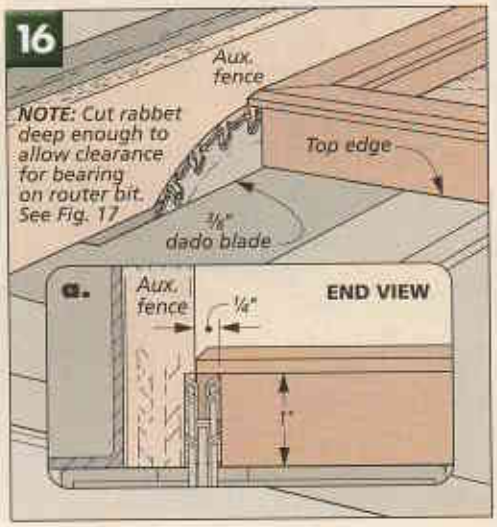
First, I routed a small chamfer around the bottom of the lid, like you see in Fig. 15.

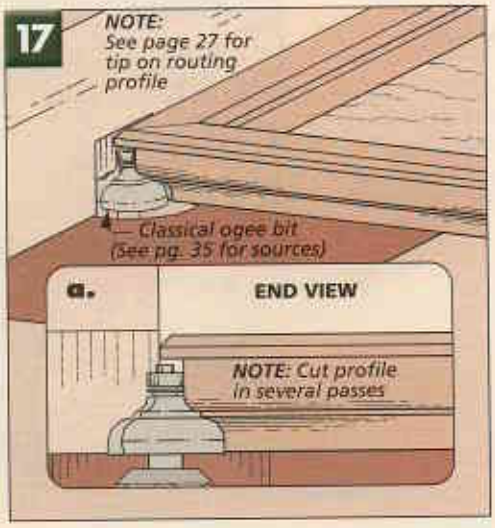
Next, I cut a deep rabbet at the table saw, as shown in Fig. 16. The key here is to make the rabbet deep enough to clear the bearing on the router bit that is used to complete the profile. If you take a look at Fig. 17, you can see what I mean.

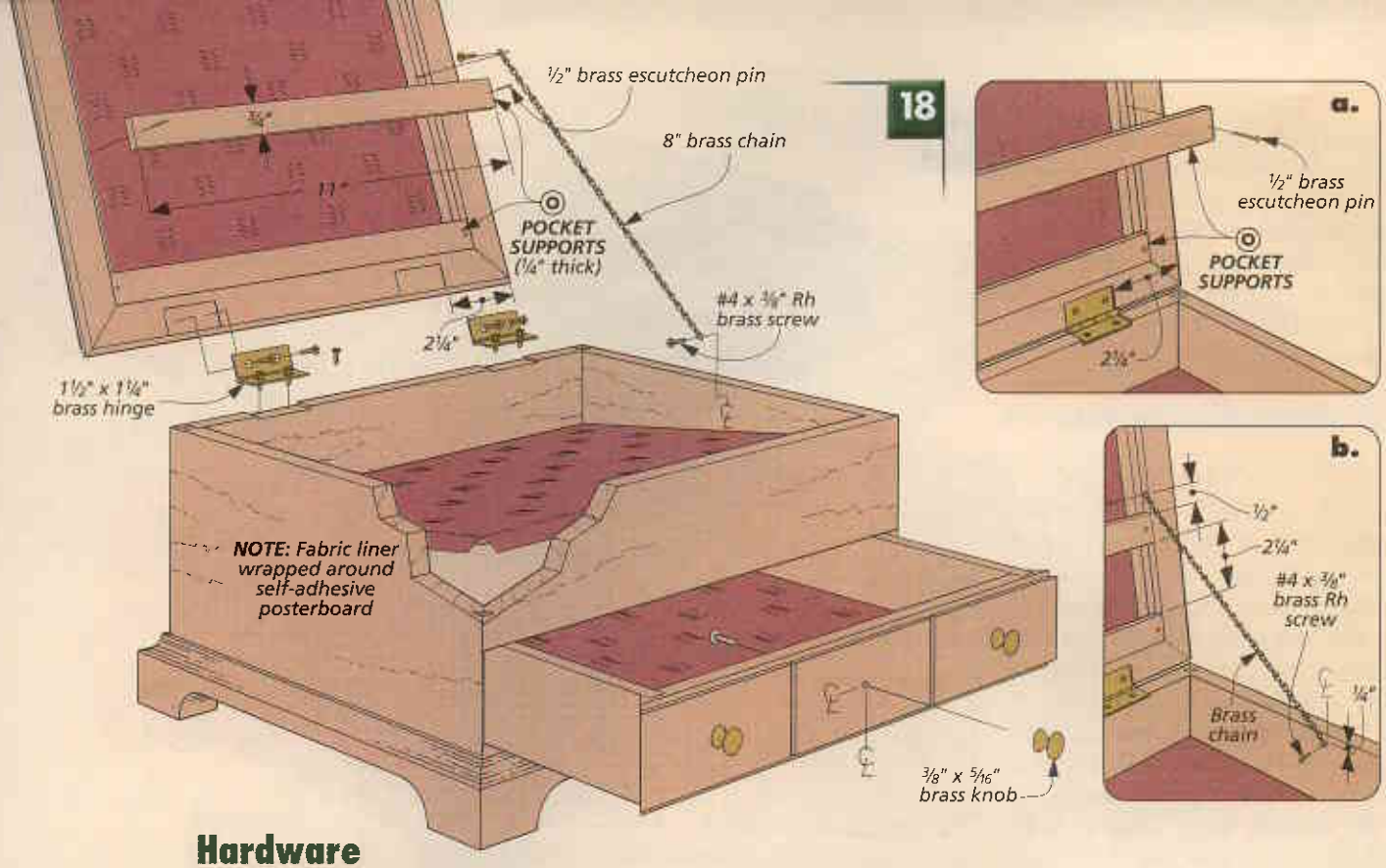





## Hardware

All that remains to complete the box is to install the hardware and add some other finishing touches.

**HINGES & CHAIN.** The hinges are mortised into both the lid and case. After tracing the outline of a hinge leaf onto the lid with a utility knife, as shown in Fig. 19, I routed out most of the waste with a hand-held router, like you see in Fig. 20. You'll need to clamp a piece of scrap to the lid to give the router more surface to ride on. I cleaned up the mortises with a chisel (Fig. 20a).

Then with the lid centered on the case, you can trace the location of the hinges onto the case. The same procedure used to cut the mortises on the lid is used on the case (Fig. 21).

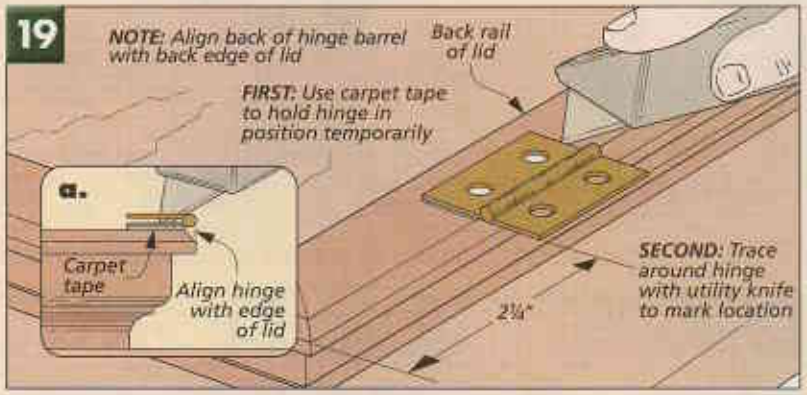
Next, a short section of chain is added to keep the lid from opening too far, as shown in Figs. 18 and 18b.

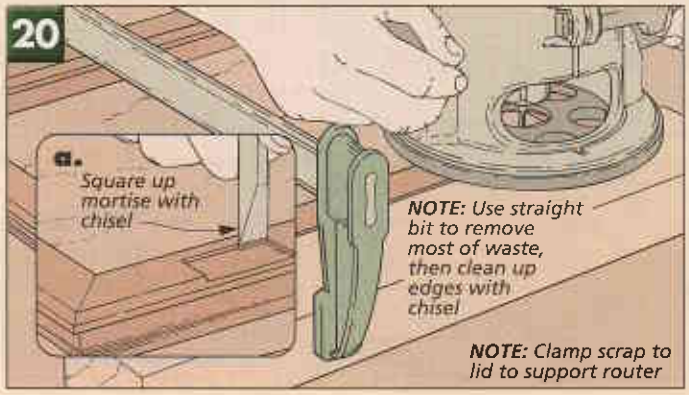
Finally, a small, brass knob is centered on each of the false front fields, as illustrated in Fig. 18.

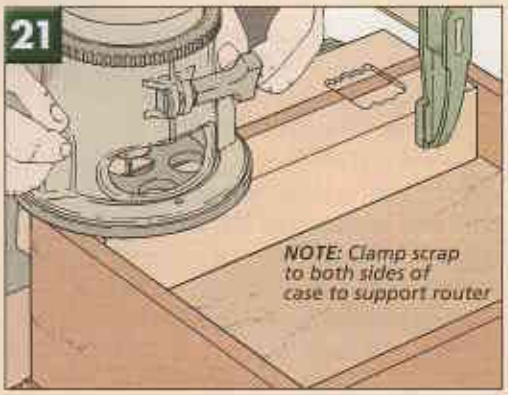
**POCKET SUPPORTS.** A pair of *pocket supports (O)* keeps items stored in the lid from falling out. These are secured to the lid with brass escutcheon pins (Fig. 18a).

**FINISH.** Next, I removed the hardware and applied three coats of a tung oil varnish to the box.

**LINING.** While the finish was drying, I made a liner to fit each compartment. To do this, I wrapped fabric around 1/8"-thick, self-adhesive posterboard that I found at a hobby shop. W



# SOURCES

### BEDSIDE CHEST

To find the hardware for the bedside chest on page 6, you may want to start with the sources in the margin at right. If you have a woodworking specialty store nearby, you might find most of the items you'll need there.

**READY-MADE FEET.** If you'd rather not make the bracket feet, you can order ready-made feet like those shown in the photo at right. Plus, if you'd like to make the chest from something other than cherry, the feet also come in oak and maple. I ordered mine from *Rockler*, but they can also be found at *Van Dyke's Restorers* (see information in the margin).

You'll need to order two pedestal feet — one for each front corner (shown on the left in the photo). The back corners each need a pedestal end (shown on the right in the photo). The pedestal ends are specifically made for the right or left side of a cabinet, so you'll need one of each.

**PULLS AND BUMPERS.** The brass bail pulls, stem bumpers, and tray knobs are also available from some of the sources listed at right.

**ROUTER BITS.** I used two special bits to form the profiles on the drawers and the base of the chest. One is a Roman ogee bit with a 1/4" radius. The other is an ogee fillet bit with a 1/4" radius. You may be able to find these locally, or they can be ordered from several of the sources in the margin.

**PLASTIC LAMINATE.** The laminate for the pull-out tray is available at home centers and some hardware stores.

### KEEPSAKE BOX

I found much of what was needed for the keepsake box (page 28) with a visit to a local hardware store and a hobby shop (for the posterboard).

**MAIL ORDER.** I did order a few items by mail. One was the drawer knobs. These came from *Lee Valley*.

The other was the router bit used for the lid profile. It's a classical ogee bit from *Amana* (#54134). You can buy *Amana* bits only through one of their dealers, so visit their website or call them to find a dealer.

**VENEER.** The veneer I used for the lid panel is a two-ply mahogany crotch veneer that I ordered from *Bob Morgan Woodworking Supplies*. A two-ply veneer makes a highly figured wood like this easier to work with. The second ply helps keep the wood from wrinkling and buckling.

Contact information for each of these companies is in the margin.

### LETTER & KEY RACK

The only hardware you'll need for the letter and key rack on page 22 is the three hooks along the bottom. The ones I used are small mug hooks (1 7/8" long) that I found in the *Lee Valley* catalog. The part number is 00W85.01. See the margin at right for ordering information.

### ON-LINE EXTRAS

You don't have to mess with a photocopier to enlarge the patterns for the bracket feet for the bedside chest (page 19) and the side panels of the letter and key rack (page 23). You can download free, *full-size* versions of the patterns. Just visit our website at www.woodsmith.com.

Or you can have the patterns mailed to you. Just send a stamped, self-addressed #10 envelope to:

Woodsmith Patterns
P.O. Box 842
Des Moines, IA 50304

Please specify whether you'd like the pattern for the bracket feet or for the letter and key rack. W

## MAIL ORDER SOURCES

*Similar project supplies and hardware may be ordered from the following companies:*

**Amana Tool Corp.**
**800-445-0077**
**www.amanatool.com**
*Router bits*

**Bob Morgan Woodworking Supplies**
**502-456-2545**
*Veneer*

**Lee Valley**
**800-871-8158**
**www.leevalley.com**
*Bail pulls, Escutcheon pins, Hinges, Key hooks, Knobs*

**Rockler Woodworking**
**800-279-4441**
**www.rockler.com**
*Bail pulls, Hinges, Knobs, Pedestal feet, Router bits, Stem bumpers*

**VanDyke's Restorers**
**800-558-1234**
**www.vandykes.com**
*Pedestal feet*

**Woodcraft**
**800-225-1153**
**www.woodcraft.com**
*Bail pulls, Hinges, Knobs, Router bits*

**Woodsmith Store**
**800-835-5084**
*Bail pulls, Escutcheon pins, Hinges, Router bits*

**Woodworker's Supply**
**www.woodworker.com**
**800-645-9292**
*Bail pulls, Escutcheon pins, Hinges, Knobs, Router bits*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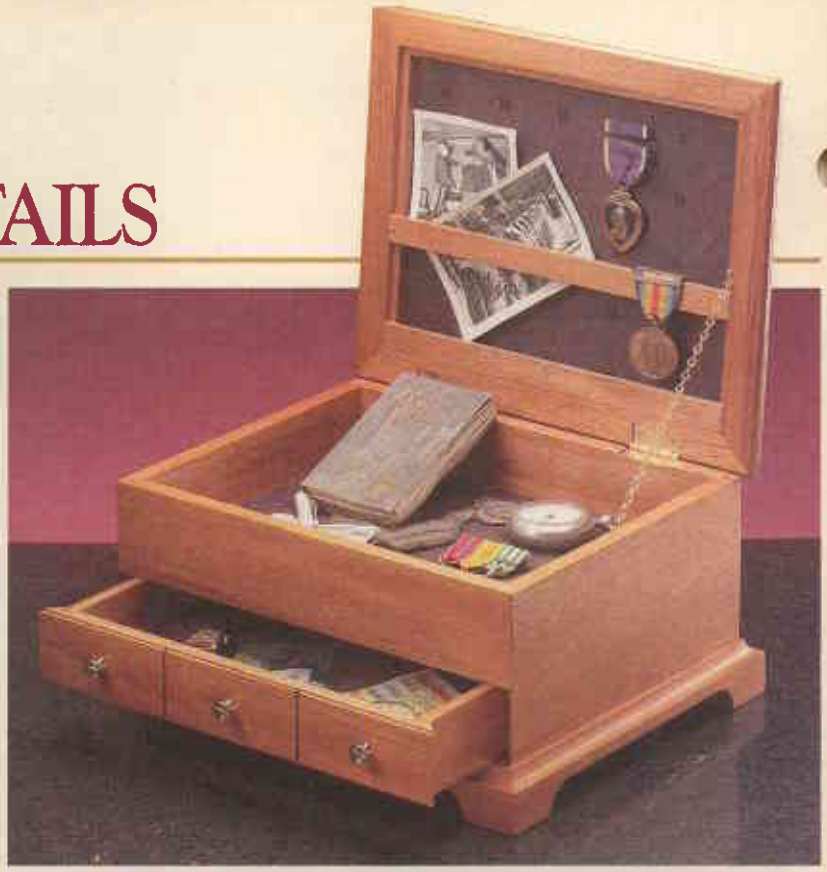
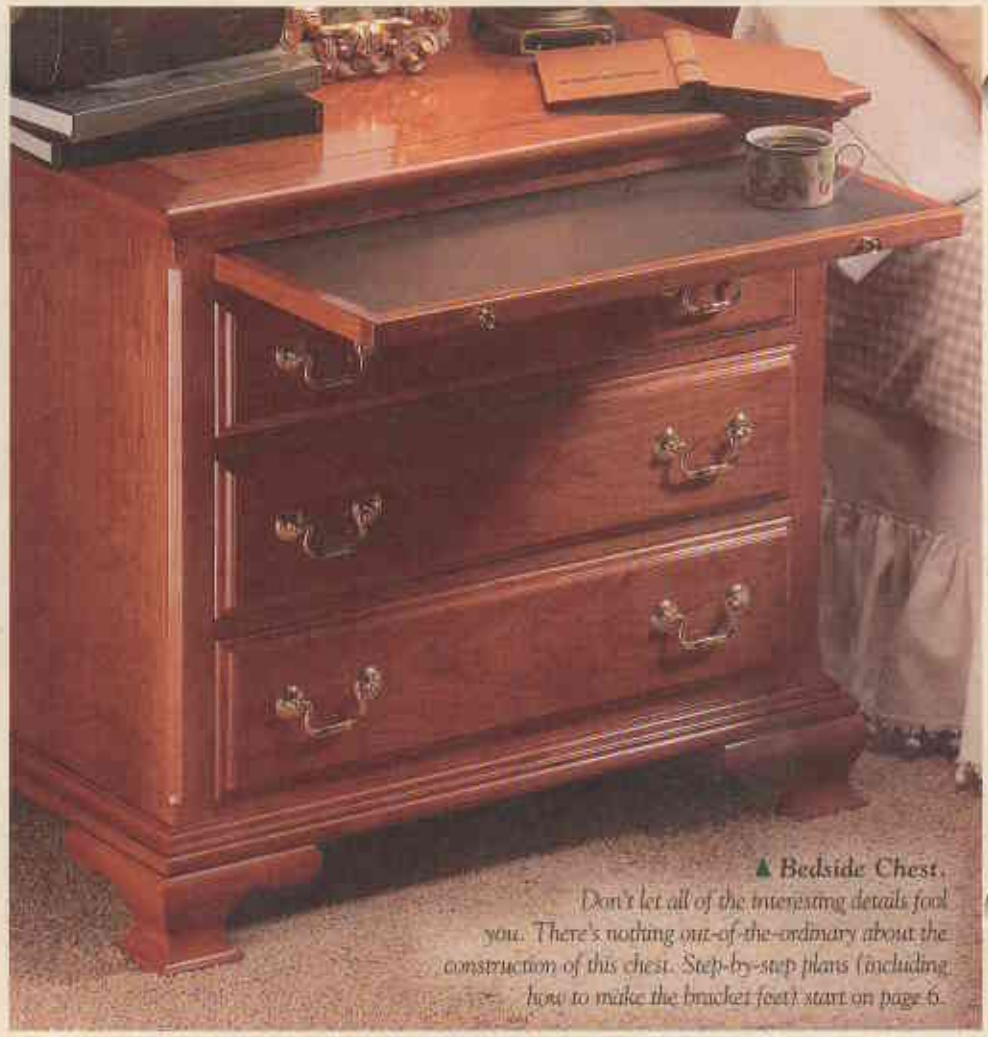
# FINAL DETAILS



**Keepsake Box.** ► *You can leave it open for display or close the drawer and lid to protect your treasured mementoes. Either way, this box provides a beautiful spot to gather keepsakes. All the details begin on page 28.*

▼ **Letter & Key Rack.** *Looking for a practical weekend project? This convenient caddy is the perfect place to collect all those "to-go" items. Complete instructions start on page 22.*



▲ **Bedside Chest.** *Don't let all of the interesting details fool you. There's nothing out-of-the-ordinary about the construction of this chest. Step-by-step plans (including how to make the bracket feet) start on page 6.*